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DEPARTMENT OF AGRICULTURE.

SPECIAL REPORT—No. 47.

CLIMATE, SOIL,

AND

AGRICULTURAL CAPABILITIES

OF

SOUTH CAROLINA AND GEORGIA.

By J. C. HEMPHILL.

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AGRICULTURE IN SOUTH CAROLINA AND GEORGIA.

By J. C. Hemphill.

The system of agriculture in South Carolina has entirely changed since the war, and although many improvements have been made in the treatment of the soil and in the methods of culture the planting interests of the State are not considered to be in a prosperous condition. The agricultural industries of the State were almost completely wrecked by the war, and the emancipation of the slaves did not by any means represent all the losses that were entailed upon this section of the Union by that cruel episode in the life of the nation.

Although there is a great deal yet to be accomplished, there has been a very encouraging advance in agricultural methods since the war. The old, clumsy, and obsolete agencies of the slave period have been swept away, and enlightened systems occupy the field. Deep plowing, high fertilizing, improved implements, labor-saving machinery, and free labor have together worked a revolution. Naturally, still further progress may be expected, and the great question to be decided is how to keep pace in economical and expeditious harvesting with the improved and abundant facilities for making the crops. Many improvements have been made; better plows are used; reaping-machines have taken the place of the old-fashioned cradle; the cotton is prepared for market on steam and water power gins, packed by powerful presses, and better secured in the bale by iron fastenings; the grain is thrashed on patent thrashers; and the tendency of the times and the hope of the farmers is to escape the drudgery of toil by utilizing the energies of nature.

As indicating the improvement in the agriculture of the State, not only in the extent of land under cultivation, but also in the manner of cultivating by the improved systems of farming which have been largely adopted, the figures of the last census show that the total number of acres of land in the State in 1880 cultivated in cotton, corn, and small grain was 3,090,972, which was 80,442 acres more than all the "improved land" in the State in 1870. The product of cotton was 517,495 bales, against 224,500 bales in 1870; a gain of about 130 per cent. In corn the increase was from 7,614,207 bushels in 1870 to 11,764,349 bushels in 1880, or more than 50 per cent. In oats the tables show

2,715,445 bushels in 1880, against 613,593 bushels in 1870, or, in other words, the oat product of the State multiplied more than fourfold in a period of ten years. In wheat the increase was from 783,610 bushels in 1870 to 962,330 bushels in 1880, or nearly 20 per cent.

In 1879 the average yield of cotton per acre for all the cotton States in that year was 188 pounds. The smallest yield in any county of South Carolina for 1880 was in Beaufort County, where it was reported at 362 pounds, and that, it must be remembered, was in long-staple cotton. The average yield of corn in the United States in 1879 was 29 bushels per acre; the average yield of corn in South Carolina per acre in 1880 was only 9 bushels, showing the great necessity for the better cultivation of this important crop. The average yield of wheat per acre in the United States in 1879 was 13.8 bushels; the average yield in South Carolina per acre in 1880 was given at 5.6 bushels. The average yield of oats in this State in 1880 was given at 13 bushels per acre, as against 28.7 bushels average per acre in the United States in 1879.

The greatest aggregate yield of cotton in any county of this State in 1880 was 34,917 bales, in Edgefield County; of corn, in York County, 626,505 bushels; of oats, in Edgefield County, 415,243 bushels; and of wheat, 107,608 bushels, in Abbeville County. The greatest yield of cotton per acre was in Marlborough County, where it reached 85.7 pounds; of corn the largest yield was 13.3 bushels, in Kershaw County; of oats, 18.2 bushels per acre, in Georgetown County; and of wheat, 12 bushels, in Charleston County, the result of experimental farming.

The total acreage planted in cotton in 1880 was 350,515 acres; in corn, 1,303,109 acres; in oats, 261,438 acres; and in wheat, 170,898 acres.

The improved lands of the State amount to 4,173,554 acres, of which 3,772,605 acres are under cultivation and 400,749 acres in permanent meadows, &c. The unimproved lands amount to 9,361,883 acres, of which 7,276,051 acres are woodlands and 2,085,832 acres in old fields, &c. The farm values foot up $84,159,604, including lands and improvements, which are valued at $68,677,482; implements and machinery, $3,202,710; and live stock, $12,279,412. The value of the farm productions of the State in 1880 amounted to $41,969,749.

South Carolina has an area of about 34,000 square miles, only about one-fourth of which consists of improved lands. The rest of her territory is taken up by forests, swamps, and marshes, almost all of which can easily be brought into cultivation. Speaking generally, the State has a great variety of soils, and possesses climatic advantages unsurpassed by any other of the South Atlantic States.

Cotton and the cereals are the chief agricultural productions, but the soil and climate are well adapted to the successful cultivation of hemp, ramie, and other fibrous plants; of indigo, at one time grown on the coast with great profit, and of the grasses and forage plants.

The State is divided into the up-country and the low-country. This division is strongly marked in the hills and highlands of the up-country, with their heavy red-clay soils, and the gentle slopes or wide flats of lighter-colored sandy loam of the low-country; in the rapid, turbid water-courses of the one, and the slow, clear currents of the other; in the vegetable growth, the chestnut, the deciduous oaks, and the short-leaf pine of the up-country, and the long-leaf pine, the magnolia, and the evergreen oaks, with the long gray moss, of the low-country.

As suggested by Mr. Henry Hammond, in an exhaustive review of the subject prepared for the State department of agriculture, it will facilitate the consideration of the agricultural characteristics of the State to treat them under certain minor natural and parallel subdivisions, which are well marked. Under this arrangement there is—

I. The coast region, extending inland more than ten miles from the shore line, and consisting of—1st. The sea islands, lying south of Santee River, and containing about 800 square miles. 2d. The salt marshes, uncovered at low tide, bordering and intercalating with the sea islands, capable of being reclaimed and embracing 600 square miles. 3d. The continuous shore line north of Santee River and Georgetown entrance 300 square miles in extent.

II. The lower pine belt, or Savannah region, lying inland and parallel with the coast region, having a width of about 50 miles, attains a maximum elevation above the sea of 130 feet, and covers 7,000 square miles, and embraces: 1st. The region below the influence of the tides—the rice fields of South Carolina. 2d. The region above tide-water, notable for its turpentine farms and its great cattle-ranges.

III. The upper pine belt, or the central cotton belt, having a width of 20 to 40 miles, embracing 450 square miles and covered with a growth of long-leaf pine mixed with oak and hickory. The soil consists of a light sandy loam, underlaid by red and yellow clays. It has an elevation above the sea of from 130 to 250 feet, and is in general characterized by what are known as sweep-wells, the water being obtained from wells 15 to 25 feet in depth.

IV. The alluvial lands—large inland swamps, bays, and river bottoms of unsurpassed fertility, covering 5,500 square miles, interspersed among the two regions last named.

V. The sand-hill region, lying immediately north of the central cotton belt, embracing a remarkable chain of sand-hills which attain an elevation above the sea of 600 to 700 feet, and extend across the State from Aiken to Chesterfield Counties. These sand-hills cover 2,400 square miles, and embrace: 1st. The red hills which lie below the sand-hill belt, and have a heavy oak growth and a red clay soil, with an elevation above the sea of 500 to 600 feet, and cover some 500 square miles. 2d. The ridge lands north and west of the sand-hill belt, and higher than it, have a gray, sandy loam on clay subsoil, and cover 400 square miles.

VI. That portion of the State known as the Upper Country, covering about 11,000 square miles, and having a mean elevation above the sea level of 600 to 800 feet. Its soils are: 1st. The cold, gray lands overlying for the most part the clay States. 2d. The gray, sandy soils from the decomposition of granite gneiss. 3d. The red lands. 4th. The trappean soils, known as flat-woods, meadow or black-jack lands in various sections.

VII. The Piedmont belt, being the extreme northwestern extension of the rocks and soils of the region just mentioned, differs from it by its more broken and mountainous character, and by its greater elevation, ranging from 900 feet to 3,430 feet at Mount Pinnacle, near Pickens Court-House, the highest point in the State.

THE SEA ISLANDS OF THE STATE.

The Sea Islands, which lie along the coast of South Carolina, embrace the most fertile agricultural section of the State. Their soil consists for the most part of a fine sandy loam, which rests upon a subsoil of yellow sand or yellow clay of fine texture, deepening in color sometimes to red. These clays give a yellow hue to the otherwise gray surface, which indicates lands peculiarly adapted for the production of the silky fiber of long staple cotton. Besides these soils, there are numerous flats or fresh-water swamps, known as bays. Here and there a few of these have been reclaimed by drainage. The soil is a black vegetable mold of great fertility, resting on fine blue sand and marl. To a very limited extent the salt marsh has also been reclaimed, but as yet agriculture has availed itself so little of the vast possibilities in this line that the chief value of the salt marsh attaches to its use in furnishing forage and litter for stock and inexhaustible material for comforts. Low as these lands lie, they are susceptible of easy drainage. The following analysis will indicate more in detail the character of the soils:

	(1.)	(2.)	(3.)
Insoluble matter	89.368	92.480	58.110
Soluble silica	2.062	0.425	0.328
Potash	0.131	0.200	0.190
Soda	0.077		1.476
Lime	0.077	0.892	0.420
Magnesia	0.038	Trace.	0.317
Br. ox. manganese	0.154	......	......
Peroxide iron	0.598	2.490	1.860
Alumina	3.051		1.131
Phosphoric acid	0.163	0.095	0.062
Sulphuric acid	0.154	0.070	0.422
Water and organic matter	4.789	2.928	44.865
Carbonic acid	......	0.420	0.840

By these analyses there is an average of more than one-tenth of 1 per cent. of phosphoric acid and one-sixteenth of 1 per cent. of potash.

The leading crop of the Sea Islands is long-staple cotton, although the soil is well adapted to the growth of vegetables, the cultivation of the grasses, and of the various grain crops which are raised in other more elevated sections of the State.

Red oats will produce from 30 to 35 bushels to the acre, and the grasses are grown with exceptionally fine success. The attention of the planters is, however, especially devoted to the cultivation of long staple cotton, and on Jehossee Island the finest fiber in the world is grown. The Sea Island cotton plant is a large and more vigorous grower than the upland plant, withstands heat and cold better, and is less subject to disease. Its bolls are smaller, and are only three lobed. The lint is much finer, stronger, smoother, and more silky than uplands, and while the latter is only from ½ to ¾ of an inch in length the Sea Island will measure 1½ to 2½ inches.

The system of planting on the Sea Islands has been almost entirely changed since the war, and many improvements have been made in the treatment of the soil. The planting of large tracts of land has been discontinued, and by thorough drainage, high cultivation, and fertilizing, the yield per acre has been largely increased and the quality of the products improved.

The number of farms is about 6,000, and the number of acres cultivated in cotton 23,887. The total area under cultivation is about 57,000 acres, an average of about 9½ acres of cultivated land to the farm. Corn is the only crop planted to any extent other than cotton, and the acreage generally averages about one-third of the area planted in cotton. Where large tracts of 400 and 500 acres were formerly planted only 50 and 60 acres are planted now, and by high cultivation it has been found that the profits to the planter are comparatively greater.

The additional yield per acre under the new system of cultivation is almost incredible. Where formerly 80 to 100 pounds of lint cotton per acre was considered a fair yield, 200 to 250 pounds per acre is now looked upon as nothing extraordinary.

One of the most important changes made in the treatment of the Sea Island soil since the war has been the adoption of a system of subsoil drainage. Underdrainage has been found to be a good protection against the loss of the crop from heavy rains. Under the old system the Sea Island planters suffered more from rains than anything else. The cotton needs a dry soil which does not hold a superabundance of water, and consequently a rainy winter and spring generally meant ruin to the long-cotton crop. The system of underdrainage, the main object of which is to carry off the superfluous moisture and leave the soil dry, was first practically tested on these lands in 1872, and with such favorable results that instead of a few hundred yards of experimental drains the farms of the most progressive planters are now underlaid by many miles of tile-drains of the most improved manufacture and constructed upon scientific principles.

In laying these drains the fields are first ditched for the reception of the pipes. The ditches are placed at distances from each other varying from 10 to 50 feet, according to the requirements of the soil, and pipes varying from 2 to 8 inches are then laid, and the ditch is covered up level with the surrounding soil. Into these long drains, which generally run the whole length of the plantation, are run shorter and smaller lateral drains, and at certain intervals throughout the fields are placed brick wells, into which some of the pipes empty, and from which others are kept supplied. The water which is continually passing through these wells is as sweet as the best spring water, and is used almost entirely by the field hands as drinking water. When a plantation becomes thoroughly drained in this way, a canal is then cut to the nearest creek. Into this canal is led the water from the pipes, and it in turn carries off the water from the pipes into the creek. The cost of this work is very great. On account of the varying condition of the land, it is hard to arrive at any correct estimate of the cost of this work, but it is roughly estimated that perfect drainage cannot be secured at less than $50 an acre. Of course, partial drainage can be accomplished at a much less cost.

In reviewing the effect of this system on James' Island in 1880, whose planters deserve the credit of adopting and carrying into successful operation the new system of cultivation which has revolutionized the culture of long cotton, Mr. J. K. Blackman, a member of the staff of the Charleston News and Courier, cites the following case, which may be taken as a practical illustration of the advantages of the system. He says:

> On a plantation of about 70 acres there was last year a bottom which was perpetually filled with water, and in winter was a favorite resort for ducks and snipe. The soil in the vicinity was so treacherous that a horse, if driven over it, would sink in up to his belly. Simple ditching had little or no effect, so the owner of the land went to work, laid his under-drains on either side of the gall, and led lateral drains into these. The result is that to-day that entire piece of land is as dry as a floor. It is hard and firm soil, and is planted with a crop for this year. I rode a horse all over it with as much ease as over any other portion of the field. Besides the great advantage to the surrounding lands in having this body of water removed, the planter has acquired an additional tract of land which is of the very richest quality, and which will probably return a greater yield to the acre than any of the other lands on the place. There are instances of this kind all over the island, and low lands and quagmires are continually being reclaimed in this way.

Commercial fertilizers were first used on the Sea Islands in 1868, and their consumption has gradually increased up to the present time. During that year from 150 to 200 pounds of fertilizers were used, and each successive year the manuring has been increased, and now from 800 to 1,000 pounds are used to the acre, representing in money an average of $20 to $25 an acre in fertilizers alone.

HOW THE SOIL IS FERTILIZED.

On James' Island and John's Island a mixture consisting of 250 pounds acid phosphate, 200 pounds Kainit (German potash salt), and 200 pounds calcined marl is applied per acre. On Edisto Island 200 pounds fish scrap (half dry in barrels), 200 pounds Kainit, and 200 pounds acid phosphate are used per acre. On Saint Helena Island no fertilizer is used. Cotton seed are worth $15 to $20 per ton, and the commercial fertilizers from $15 to $30. It is estimated that on some farms the cost of the fertilizers and compost will reach as much as $40 an acre. The effect of the new system will be seen by taking the maximum yield per acre on James' Island, where the new experiments have been most largely tested, from 1872 to 1880. In 1872 the maximum yield per acre was 103 pounds; in 1873, 205 pounds; in 1874, 211 pounds; in 1875, 215 pounds; in 1876, 245 pounds; in 1877, 309 pounds; in 1878, 329 pounds; in 1879, 400 pounds, and in 1880, about 475 pounds. These figures do not apply to a single acre prepared for the purpose, but to an entire crop, taking the average of the good, bad, and indifferent lands.

According to the census returns of 1879–'80 the average product of the farms on James' Island was one bale of cotton on 2.4 acres; on John's Island, one bale to 3.3 acres; on Wadmalaw Island, one bale to 3 acres; and on Edisto Island, one bale to 2.6 acres.

The highest yield on record to one acre is 566 pounds of lint on a single acre on Mr. Schaffer's place of Wadmalaw Island. A planter on John's Island made an average of 290 pounds per acre, on a tract of 20 acres, while small farmers in the same locality produced only 50 pounds to 75 pounds of lint per acre. The members of the Farmers' Club, on James' Island, recorded for 1879 an average yield on their fields of 280 pounds of lint.

On Edisto Island there is a tract of 100 acres that produced in that year 210 pounds of lint per acre, and conservative farmers there consider 200 pounds of lint an average on the larger farms, year in and year out, a fair yield of fine staple. For instance, one of the James' Island planters in 1879 made 400 pounds per acre on a tract of 65 acres. The cost of fertilizers on this tract averaged about $30. The cotton sold at 45 cents per pound, which made the return for each acre $180. The cost of cultivating, taken together with the cost of fertilizing, may be placed at about $80 per acre, leaving a clear profit of $100 per acre, exclusive of the interest on the lands and improvements. The average crop made by the white planters, taking them all round, for the year 1879, was 280 pounds per acre, produced at an average cost of $66 an acre, exclusive, of course, of the investments in the land, stock, and improvements.

In a circular issued by the State department of agriculture, the cost of cultivating an acre of cotton on Edisto Island, placing the yield at 200 pounds of lint per acre, runs from $45.69½ to $51.29½; on James' Island, placing the yield per acre at 280 pounds of lint cotton, the cost of cultivating an acre averages $52.25, and among the better class of small farmers on John's Island the cost per acre averages $27.32.

THE PREPARATIONS FOR PLANTING.

In the preparation of the Sea Island lands for cotton planting the first step is to hoe off the weeds, cut up the cotton stalks, and pile and burn this litter. This costs 40 cents per acre. Bushes are grubbed up at a cost of 7 cents per acre. The land is not broken up broadcast with the plow, but early in February two furrows of a single-horse turning plow are run in the old alleys, making a trench 7 or 8 inches deep. In this furrow a subsoil plow may or may not be run, according to the character of the subsoil. Wherever underdrainage is practiced, as on James' Island, this furrow is generally used. Before plows came into use this trench was never made, and even now it is omitted by some of the most successful planters. Into this trench, or into the middle of the alley where there is no trench, the manure is placed. This consists usually of about twenty cart loads of marsh mud and 1,000 to 1,400 pounds of cotton seed. Stable and lot manure, together with composts of marsh-mud and rushes, are also applied in this furrow at the rate of forty cart loads per acre on such a portion of the land as the limited number of stock enables the farmer to treat in this method. On the lines of manure thus laid down, a certain quantity of commercial fertilizer is drilled; then the land is ready for listing, which is done by hauling on to the manure, with a hoe, the soil from the tops and sides of the old bed. A more recent practice is not to list with the hoe, but to cap in two furrows with a turning plow on the manure. This costs only 17½ cents per acre, while the listing with the hoe costs 80 cents, although the latter has the great advantage of bringing all the vegetable mold and humus directly to the spot where the roots of the plants are to grow. Over the mass of dirt, weeds, manure, &c., thus collected in the old alley, a double roller, five feet from center to center and weighing about 800 pounds, is passed to press together and compact the whole, completing two rows at a time. All this should be completed by the first to the middle of March, and the bed is then built up by lapping in two furrows on a side, with a single or double horse turning plow on the manure.

The land is then ready for planting, which may begin any time after the 20th of March, but the 1st to the 10th of April is the time preferred. Cotton-planters are not used. Three hands do this work; the one ahead chops a hole with a hoe on the top of the bed at intervals of 12 to 18 inches; another hand drops eight or ten seed in each hole, and the third follows and covers carefully with the hoe. Three or four pecks of seed are used to the acre. The seed makes its appearance above ground in eight to twelve days after being planted, and the stand is perfected from the second week in April to the first week in May. Hoeing begins about the first of May. The second hoeing takes place the last of May. The plows then break out the middles (the spaces between the new beds where the old beds stood). The hoe hands follow, and pull up the loose dirt left by the plow to the foot of the cotton. This is called hauling; by it the new bed is completed, the cotton is kept from "flagging" (falling down), and the grass is kept under. It costs eighty cents per acre. At the second hoeing some stalks are thinned from the bunch in which the seed breaks the ground, and at each succeeding hoeing and hauling other stalks are removed, until in July only one stalk of each bunch is left. There are four hoeings and four haulings by the last week in July, one or more furrows with a sweep plow being run through the middles previous to each hauling. By the last of July the culture is completed, except to run a furrow with the sweep between the rows in August to destroy grass and keep the cotton growing. The first blossoms appear about the middle of June, when the cotton is fifteen inches high, and the bolls open toward the end of August, when the plants have attained a growth of four to five feet.

Cotton picking commences from the last week in August to the second week in September. For the first picking, while the cotton is thin, one and a half cents per pound seed cotton is paid. Subsequently, the price is one cent per pound—never less until the last of November, when it rises again to one and one-half to two cents. By the 15th of December the crop is gathered.

In connection with the cultivation of cotton one of the most important questions is the preparation of the staple for market after the crop has been made. After the cotton has been picked, weighed, and housed, it is next spread out in the sun, on what is called "an arbor." This is a platform usually made of inch boards raised a few feet above the ground, and some twenty-five feet or more square. Here the sun and air dry the cotton, preventing it from heating, which it is liable to do when stored in bulk; and it is thought also causes the lint to absorb some of the oil in the seed, which adds to the silky luster of the fiber. After being thus dried, it may be either stored or passed at once to the "whipper," a machine that knocks out the dust and sand, and leaves the cotton whiter and more open. Formerly, when the price was higher than it is at present, it was all assorted. A hand was given 150 pounds of seed cotton as a day's task, which he thoroughly overhauled, picking out all specks, stained cotton, fragments of leaf, &c. At present, however, this is done by two hands who examine the cotton as it passes into the gin, and two others behind the gin, who pick out cracked seed, motes, &c., as the lint issues from the gin.

The roller gin is used for detaching the lint from the seed.

All the gins are now run by steam power. Under the old system every plantation had its own gin, but in order to meet the necessities of the numerous small farmers who are now planting on their own account, "toll" gins have been established, and at these gins the larger part of the Sea Island crop is prepared for market. The usual charges for ginning are from 3½ to 4 cents per pound of lint cotton. The cotton is packed in round bales, in Dundee bagging. No press is used, as it is thought it would injure the fiber. It is questionable, however, whether the compression of the cotton after it has been ginned is really injurious. Leading manufacturers are divided upon this point, and a recent experiment made by the manager of one of the most successful cotton mills in the South, under especially favorable circumstances for thoroughly testing the matter, went to show that the more powerful the compression the larger the product. Yarn made from unpressed cotton was, perhaps, a fraction stronger than that spun from pressed cotton; but what slight advantage it possessed in this respect was more than counterbalanced by the evenness of the thread from the pressed cotton, which, after all, is regarded as the surest indication of strength. The work of packing the Sea Island cotton is now done by hand, the cotton being beaten into the bag with a pestle. If it can be established, however, that the compression of the cotton by the ordinary press, or by the steam compress, does not materially injure the fiber or affect its marketable value, the facilities for getting the crop on the market will be increased and the cost of packing greatly diminished.

THE PLANTER'S PROFIT ON LONG-STAPLE COTTON.

It would be difficult to reach an accurate estimate of the profit per acre to the farmer in the cultivation of long cotton. This would vary according to the grade of cotton produced, the prices fluctuating with the fineness of the staple from 30 cents all the way up to $1.10 per pound. The value of the cotton, too, would depend greatly on the handling of the crops, whether it was picked in time, properly stored, sunned, dried, ginned, and moted. But placing the price of the cotton at 40 cents per pound, the cost of production will run from 18 to 27 cents per pound, and the profit per acre from $38 to $69.

The most dreaded enemy of the Sea Island cotton crop is the caterpillar, which makes its appearance in warm wet spells in the latter part of summer, and speedily consumes the foliage. At one time so great and constant were the depredations of these worms that it was feared that they would, as they did for some years, put a stop to the profitable culture of this crop. Paris green is now successfully used in preventing damage from this source, and since 1867 there has been no general visitation of caterpillars. A mixture of one pound of Paris green, one pound of rosin, and forty pounds of flour, dusted by hand over the leaves, is certain death to the worms. The cost of applying this preventive is about $3 an acre.

LABOR ON THE SEA ISLANDS.

On the Sea Islands the field labor is performed almost exclusively by negroes. Nearly all of them are engaged in farming on their own account; a large number own farms; a still larger number rent lands for cultivation, and even the laborers are paid most generally by granting them the use of so many acres of land for certain stipulated services.

On James' Island laborers are paid cash for their work at the rate of 50 cents a day, or $10 per month with board, the latter being a ration of three pounds of bacon and one peck of grits a week, with shelter and fuel. The soil and the condition of the laborers are reported as improving, and cash wages are considered preferable to the share or the land system of payment. Arable land rents here at $2 an acre per annum. The price of land is from $15 to $30 an acre.

On Edisto Island what is called the "two-day system" largely prevails. Under this system the laborer gives the landlord two days' work in every week during ten months of the year, and receives in return a house, fuel, and from five to seven acres of arable land, which, together with such land as he may rent, he cultivates on his own account during the remainder of the week. When extra work is required on the farm, these laboring tenants are employed at 50 cents by the day, or by the task. The days are generally Monday and Tuesday; and the rest of the week the laborer has to himself to work his own crop. An able-bodied hand is expected to work two "tasks," or a half acre a day, so that for the land, &c., furnished by the planter he cultivates one acre in the week. The additional labor required is supplied either by other "two-day" hands, or by day labor, for which wages of 50 cents a day is paid.

There is a conflict of opinion as to the satisfactory nature of this system; some claiming that the laborers operating under it do not cultivate more than two acres on an average for the proprietor, and burden his estate with the support of a much larger population than necessary to its cultivation. By means of this, however, a large amount of resident labor is secured on the place, which is of prime importance during the cotton-picking season. The laborers themselves prefer this system. As a rule they are comfortably off, and about 7 per cent. are reported as owning homes of their own and some land.

Lands on Edisto are worth from $10 to $25 per acre; formerly they were worth from $50 to $70 per acre. Small tracts rent for about $4 per acre per annum; larger tracts for less.

On John's Island the wages run from $8 to $10 per month. Most of the laborers, however, are engaged for two days' work a week, the employer allowing them a house, fuel, and six or seven acres of land free of rent. It is said that the system is not satisfactory. The land worked by the landlord is improving; that worked by the laborers on their own account is deteriorating rapidly. The labor is not so easily controlled as when cash wages are paid. The lands vary greatly in price, prices ranging from $2.50 to $20 per acre. Rent is about $3 per acre per annum.

THE COLORED PEOPLE.

The colored people of the Sea Islands have made very encouraging progress since their emancipation, and have done much to improve their material condition. They now own on Edisto, John's, James', and Wadmalaw Islands at least ten thousand acres of land, which is worth, at a not extravagant estimate, at least $300,000. Their holdings range from ten to twenty-five acres. In some cases the farms contain as much as sixty acres, and in a few instances even more. At the close of the war they had nothing but their own industry and the training of a lifetime of servitude to go upon, and their condition to-day will compare most favorably with that of the laboring people of other countries. The more thrifty planters of this class have in a number of cases acquired quite comfortable little fortunes, to which they are gradually adding from year to year. The industry and frugality displayed by these people is all the more highly to be commended when it is remembered that they began life without any training in the management of their own affairs. In the history of no country has the condition of a race of serfs improved so rapidly in so short a time after their emancipation was declared.

One instance may be given as a practical illustration of the opportunites for improvement within the reach of all equally industrious and economical colored men. In 1872, John Thorne went to Edisto Island as the agent of a company of thirty-five colored men, to purchase a tract of land containing seven hundred and fifty acres. The place was bought for $6,000. Each member of the company held so many shares, and the land was apportioned out among them according to the shares they held. The holdings ranged in size from ten to twenty-five acres. Thorne, himself, secured one hundred and sixty acres of this tract, and owns, altogether on the island, two hundred and fifty acres of land. He is the proprietor of an extensive store and store-house, and owns a comfortable residence. He also runs a gin-house with six gins, and last year ginned out upwards of 400 bags of cotton of 300 pounds each, for which work he received four cents per pound. He advanced largely to several colored planters, and is worth from $15,000 to $20,000.

In 1866 very few of the colored people owned any personal property, and at present there is hardly a colored man who does not own a horse or mule, a cart, and a cow, as well as household goods and agricultural implements. The colored planters average a bag of cotton to three acres, and make from $500 to $800 a year, upon which they can live comfortably and save money.

West of Saint Helena Sound land is almost, without exception, in the hands of small negro farmers, either as tenants or proprietors.

Much of this land, valued formerly at $40 to $60 an acre, was confiscated, as a war measure, by the United States Government. A good deal of it was purchased by negroes at the government sales at $1.25 an acre on credit, and is still owned by them. The size of the land holdings is from one to twenty acres, and nowhere is more than fifteen acres of cotton cultivated under one management. Much of the land is uncultivated, and the remainder, in small patches varying from one-eighth of an acre and less to three acres in size, is planted in corn, cotton, and sweet potatoes.

Nowhere in the State, not even among the gardens on Charleston Neck, is the system of small culture so strikingly illustrated. The farmers usually own a cow, a mule, or a horse, and the work-stock is sufficiently numerous, though of a very inferior quality. Farm fixtures are of the simplest and cheapest description. There is seldom any shelters for the stock, the cabin of the proprietor being generally the only house on the premises. The stock are fed on marsh grass with a little corn, and are, in a large measure, subsisted by being picketed out, when not at work, to graze on such weeds as the fallow spontaneously furnishes. Plows are numerous enough, but the chief reliance is upon the hoe, which, for several generations, was the only implement known to agriculturists on this coast.

These small negro farmers have enjoyed many advantages. They bought their lands on easy terms, at between two and three per cent. of their value. They had the benefit of the famine prices of cotton during the war for their staple product. Since the war the industries connected with the working of the phosphate rock in the rivers and on the mainland adjacent to them has furnished the men with employment at higher wages than could be obtained elsewhere in the State. All the larger houses and buildings about the old farmsteads have rotted down or been burned down, and have been replaced by small cabins and a few country stores, where the traders, invariably white men, who take no part in the cultivation of the soil, collect and dispose of the crop and supply the community with such articles of food and dress as are required. The colored people of these islands are furnished with excellent school facilities, and are making some progress in the acquirement of knowledge. They have their own churches, contribute liberally to their support, and are prosperous, peaceful, and happy. Of late years they have not been paying a great deal of attention to politics, and are generally a law-abiding people.

Such, in a general way, is the condition of agriculture on the Sea Islands of South Carolina. They form a part of the State, but at the same time are so dissimilar in the character of their products and in the methods of farming as to require a distinct chapter in reviewing the agriculture of the State.

THE RICE-GROWING REGION.

The lower pine belt or savanna region of South Carolina, which lies contiguous to and immediately inland of the coast region of the State, contains 10,226 square miles, of which about 4,500 square miles are alluvial or swamp lands, either covered with water or subject to overflow. The tilled land is 358,533 acres, by the census returns of 1880, which is 30 per cent., or 171,306 acres, less than the number given by the census of 1870. There are 1.6 farms and 35 acres of tilled land per square mile, or 20 acres of tilled and 400 acres of untilled land to the farm. Something less than 1 per cent. of the total area, or 6.4 acres per square mile, is planted in cotton; there is in grain of all kinds 15.8 acres, and in other crops and fallow 13 acres per square mile. These figures represent the minimum (the area in other crops and fallow alone excepted) to be found anywhere in the State. The tilled land is 1.7 acres per capitum; .2 acre more than on the coast. This is not quite one-half the average for the whole State, and is owing, 1st, to the large area of unreclaimed swamps; 2d, to the number of the population engaged in the turpentine and lumber business. The large bodies of land held solely for the forest products they yield, as turpentine, lumber, shingles, staves, &c., account for the fact that while the number of farms to the square mile is few, the number in proportion to the population is as great even as among the small farms on the coast, being one to every twelve and a half of the population. The amount of land tilled per capitum has decreased 38 per cent. since 1870, thus showing that the forest industries are gaining on agriculture.

In point of production there are 2.7 bales of cotton per square mile, against 1.9 in 1870, an increase of 41 per cent., but still less than half the minimum produced elsewhere except on the coast. Per capita the yield is only 68 pounds of lint, but per acre planted in cotton it is 219 pounds, showing that in this little cultivated region the yield of the land planted is not only above the average of the State, but is absolutely the maximum anywhere reached. So, too, of the grain crop; while it was only 7 bushels in 1870, and in 1880 only 11 bushels per capita, and only 236 bushels to the square mile, it averages over 15 bushels to every acre planted, which is nearly 50 per cent. above the average of the State. The increase in the amount of grain produced has been 82 per cent. on the crop of 1870.

The uplands of this region comprise three leading varieties of soil: 1st, a sandy loam with a white sandy subsoil; 2d, a sandy loam with a yellow subsoil; 3d, a sandy loam with a clay subsoil; the clay is generally yellow, but sometimes it is red. The surface soil is lighter or darker in proportion to the varying quantities of vegetable matter it contains, and where the clay subsoil covers it it assumes on cultivation a mulatto color. These soils bear a strong resemblance to the Sea Island soil, having this advantage, however, over them, that they are very generally underlaid by easily accessible beds of marl richer in lime than those of the Sea Islands. In drainage, however, they compare unfavorably with the Sea Islands. For the scouring effect of the rise and fall of the tide, which keeps the water-ways around the islands open, is not only not experienced in this belt, but on the contrary the luxuriant water growth that flourishes here has filled up the channels, converting them into swamps through which scarcely any current passes. This, in connection with the level character of the country, renders the body of these lands wet. But for this, the good mechanical constitution of the soil, being light and easily tilled, and at the same time (except in the case of white sandy subsoil) sufficiently compact to be retentive of manures and moisture, together with the abundance of marl and of peat and muck at hand as amendments to the virgin soil, would have made them most desirable lands for tillage. As it is, not more than one acre in twenty-two is under cultivation, and the prices of lands are from $5 down to 50 cents.

The overflow lands of this section present a variety of swamp lands. The most elevated of these are cypress ponds. Shallow flats, with an impervious clay bottom, thickly grown in small cypress; some of them contain a thick deposit of vegetable matter, and when drained have proved very productive.

Next in order come the almost impenetrable bays, thickly set with a growth of bays, gum and tulip trees, and a dense undergrowth of vines and bushes. The soil is peat or muck, resting on blue mud and underlaid by marl and sand. Then come the open savannas and the river bottoms, a rich, tough, loamy soil, having at times a depth of sixty feet.

The most characteristic crop of this region is the rice crop. The various methods of its culture fall under two classes, the dry and the wet culture.

The dry culture is pursued on uplands and on low grounds not susceptible of irrigation. It is cultivated very much like cotton, and is planted in drills 2½ to 3½ feet, and in hills 18 to 24 inches apart; twenty to thirty seed being dropped in the hills. The ground is afterwards kept clean and stirred by the use of the plow and hoe. The yield varies with the soil and culture, from fifteen to fifty bushels to the acre. Being free from the seed of the red rice that springs up as a volunteer in the fields under water culture, this rice often commands a good price as seed rice.

Rice may be produced wherever the cereals flourish, and the higher the latitude the better is the quality, although the yield is less. The uncertainty of labor directly after the war made the cultivation of rice in the tide-water region of the State a hazardous business, which increased the value of the crops, greatly stimulating its culture on uplands, so that it is now planted in almost every county in the State, from the mountains to the coast. In some of the middle counties it is taking the place of the cotton crop, planters finding it less expensive to cultivate and paying a greater percentage of profit per acre. In some portions or sections of the lower pine belt the lands lie very level, and being sandy, with the clay deep, it takes from 2 to 3 acres to produce a bale of cotton when fertilized. These same lands in their natural state readily yield from fifteen to thirty bushels of rice per acre, at less cost in cultivation and preparation for market than cotton.

Of late years many experiments have been made in fertilizing the rice crop, and, from the accounts that have been published, with marked success. Superphosphates, acid-phosphates, cotton-seed meal, and Peruvian guano have all been tried with successful results. On worn lands the application of potash, from one hundred to two hundred pounds to the acre, has proved a success, stimulating the growth of healthy straw and more than doubling the yield of grain.

The preparation for planting and the cultivation of the upland rice crop differs very little from that of cotton. The land is either broken up broadcast and afterwards thrown into beds, or the beds are thrown up and afterwards reversed just before planting. In either case thorough pulverization of the soil, so essential to the successful cultivation of any crop, is secured. The time for planting extends from the 1st of March to the 1st of June. The plan generally adopted for planting is to open the bed with a three-inch "bull-tongue" plow, sow down with the hand from one to two pecks to the acre, and cover with a board; or follow in the "bull-tongue" furrow with almost any of the improved cotton-planters of the day, so regulated as to let down the requisite quantity of seed, the board attached to the planter covering it. These planters save time and labor and secure uniform stands. There are eight or ten varieties of rice. The kind generally used is the Carolina white or flint rice, it proving most productive on uplands. Another variety called "Cochin China," dry or mountain rice, from its adaptability to a dry soil without irrigation, is also used, but to a limited extent.

After the rice is up, if there is much grass in it, it is considered the better plan to bar off with five or six in the turning plows which throw the dirt to the middle of the alley, leaving the rice on a narrow ridge. It is then in a condition to be easily cleaned by the hoe. This ridge should be thoroughly cleaned by chopping it out the width of a hoe, leaving only a few stalks in the hill which will tiller sufficiently to give a good bunch, and will insure good, heavy heads. If left thick in the hill or bunch, the yield will be proportionately light, as it will not head out well and the grains will be light and chaffy. Many failures to raise a successful crop result from this cause. As soon after the hoers have gone over it as possible the middles are run out with one, two, or three furrows with a sweep plow—if the land is dry a large sweep will do the work with one furrow. This treatment leaves the rice clean and on a level bed, in fine condition for growing. If the rice is not grassy at its first working there is no necessity for burning off. It should then be sided up in the drill with sweeps, and the hoers should chop it out to the required stand, taking care to remove every sprig of grass, as the after culture will be comparatively easy and light if the precautions are taken to secure a clean stand at the first working. By the time the crop again needs working it will be large enough to allow a little dirting by the sweeps, and so leave the hoers but very little to do.

The crop should be plowed with sweeps as often as may be necessary to keep it clean and in a healthy, growing condition. Its last working should be given when the body of the stack begins to swell and shows an occasional head protruding. This last working should be thorough but shallow, and the wing of the sweep should be so turned up as to give as much dirt as possible, and so as to throw the loose dirt among the rice.

The proper time for harvesting the crop is when the bottom grains of the heads are in a doughy state. The heads first begin to ripen at the top. If the crop is cut earlier there is great waste in hulling the grain, as all green or immature grains will break up so fine as to be only fit for stock food.

The implement generally used for cutting the crop is the rice-hook or sickle. The stalks should be cut 6 or 8 inches above the ground and laid in loose parcels, with the heads resting upon the stubble. A fair day's work for untrained hands is about one acre. It is said that the grain can be cut with the common cradle or scythe, and that in this way a good hand can cut 3 or 4 acres a day. If the rice is well ripened when cut, the straw will require from twelve to twenty-four hours of sunshine to cure, when it can be tied up in bundles and stacked or hauled directly to the thrashing-room without being tied. If properly stacked in the field the grain will keep well for some time.

The rice can be thrashed either by whipping out with the hand, trampling out by horses, or by running it through any of the modern wheat or rice thrashers, of which quite a number have been invented for ordinary farm purposes. The common spike thrashers, run by horse-power or steam, easily attached to any gin gearing, will thrash out from 100 to 200 bushels a day. One of the principal objects is to regulate the speed of the machine so as to clean the straw of all grain and at the same time to avoid hulling the rice. After thrashing, the rice may be cleaned with the ordinary grain fan, or by pouring it from a scaffold 20 feet high, which is much the quicker way and the better plan when there is a good breeze blowing. Where hulling-mills are not convenient the grain can be almost cleaned by running it through a corn-mill, the stones being raised so as not to crush the grain. In this way nearly all the hulls will be broken and the most of them rubbed off. After the outside husk has been taken off the rice is not clean—the grain is covered by a thin glutinous membrane, which can be removed by beating. The chaff is an excellent litter for stables, and the millings or rice waste, mixed with corn-meal in equal proportions, is unequaled for fattening hogs. The straw is considered good provender by some. If it is fully ripe when cut, it is not very nutritious, and produces constipation in either horses or cattle. If the straw is cut in its green stage and cured in the sun, it is eaten with great relish by horses and cattle, is very nutritious, and is regarded as little inferior to the best hay.

The cultivation of upland rice is largely in the increase, and is destined at no distant day to become the staple money crop throughout a portion at least of the pine belt of the Carolinas and Georgia.

The water culture of rice is conducted on three sorts of low grounds:

1st. Flats which may be irrigated from ponds or water "reserves" lying at high level.

2d. River swamps into which water may be conducted by canals running from the river above, and returned to it again at a lower level. Such lands may be found anywhere in the State.

3d. The tide-water lands, which are only found near the coast. These lands lie in such a position on the lower course of the rivers that, while they are subject to a sufficient "pitch of the tide" to irrigate them on the flow and to drain them on the ebb, they are free from the invasion of salt water below and from the freshets that occur higher up on the streams.

By taking in the fresh water from the rivers above and letting it out below at low-tide, these lands have been reclaimed as low down as the salt marshes. They are of limited quantity and of inexhaustible fertility, the waste of cultivation being constantly restored by the rich deposits from the turbid streams that irrigate them. Formerly their value was estimated in hundreds of dollars per acre. Since the war the difficulty of obtaining labor has changed this; many of the finest plantations remain uncultivated, or only partially cultivated, and lands once worth from $200 to $300 per acre may now be bought at from $20 to $30, or even less.

There are numerous methods employed in the water culture of rice from that known as dry culture, when water is sparingly used, to that known as the "all water culture," where the crop is only dried once or twice during the season for the purpose of weeding it. Usually it is flowed four times, known as the "sprout flow," to perfect the germination; the "point flow," to stretch up the young plant; the "long flow," when the plant is six to eight inches high, after the first and second hoeings; and the "lay-by flow," after the third hoeing and until harvest. The fine mud and decomposed vegetable matter that compose this soil is so soft that a horse will readily bog in it, and therefore horse power has been little used in its cultivation, an objection that, with the solid cross dams at short distances, would not apply to the plow moved by steam power. Horse power has, however, been used so far as to show that seed drills for planting and the mowing machine for havesting may be succcessfully employed in rice culture. Under these circumstances, taking into consideration the amount and certainty of the yield (from 40 to 80 bushels per acre), and the improved machinery for thrashing and hulling, there is perhaps no food crop so entirely under the control of mechanical inventions and so little subject either to the vicissitudes of season or the uncertainties of human labor as the rice crop.

Although 80 bushels per acre is generally given as a large field crop, the possibilities of the product are much greater, and there is one report of a yield from selected seed at the rate of 1,486 bushels per acre. The rice crop for the whole State averages 20 bushels to the acre. This means 600 pounds of merchantable rice, worth say $30; 400 pounds of straw, worth $2.80, and 100 pounds of flour, $1.50, in all $35.30. Cotton gives an average of 182 pounds per acre, which, at 10 cents, would be only $18.20, or a little over the gross yield of rice.

The lack of the large capital needed for the proper preparation of the lands devoted to the growth of this crop, for the construction of embankments, and for providing the necessary processes for drainage and irrigation has prevented the development of this great industry. In this section the culture of corn as a market crop would be profitable. The red rust proof oat is admirably adapted to this climate, and is one of the most certain crops, yielding readily from 30 to 50 bushels to the acre.

Although this section, comprising Charleston, Georgetown, Horry, and portions of Colleton, Williamsburg, Marion, and Clarendon Counties, contains so important a part of the total area of the State, it produces only a little over 5 per cent. of the cotton crop. In Colleton County one-quarter to one-half of the swamp lands are reported as thrown out of cultivation, but none of the lighter upland; in Williamsburg 10 to 30 per cent; in Clarendon at least one-third of the cultivated lands have been turned out since the war; in Horry very little.

These lands all produce as well as virgin soil when reclaimed and again brought under cultivation. The depth of plowing is usually 4 inches, with a single-horse plow. Sometimes a double-horse plow is used, and a depth of 6 to 7 inches is reached. Subsoiling is little practiced; fall plowing is especially adapted to these light soils that are not run together and packed by the winter rains, but is not generally practiced. A rotation of crops is attempted so far as the exigencies of the cotton crop allow; by following cotton with corn, and that in the same year with oats, sowing pease on the stubble, and following with cotton again next spring. Home-made manures are used so far as they go, with excellent results. Composts of muck and stable manure are coming more into use, and the field pea, either turned under green or allowed to wither on the surface, adds largely to the fertility of the soil. By these means almost any of the uplands can be made to produce a bale of cotton to the acre.

Commercial fertilizers, especially the Charleston phosphates, are largely used. In Clarendon County these are used almost exclusively, but in Colleton County the preference is given to the potash salts. Cotton seed is applied with great benefit to cotton.

Under the best system of farming in this section, the land is broken up broadcast, with single or double plows, in the winter or early spring, but the prevailing practice is simply to turn the old beds into the alleys by running the bar of a single-horse plow to them, making two to four furrows to the bed, the usual width of the rows being three and one-half feet. This leaves an open furrow in the center of the old bed, in which the manure is deposited as early as practicable, in February or March. The furrows are then recovered and the dirt thrown up on the manure, the bed built up again, and the land is ready for planting. Improved seed are used, from one to three bushels being sown to the acre. By the employment of a cotton planter, drawn by a mule, a good hand can plant about 6 acres a day. These machines are coming into very general use, and do away with a great deal of the labor necessary to get the crop planted under the old system of drilling the seed by hand.

Cotton planting takes place about the 10th of April. The seed appear above ground in five to ten days, although, when late planted in a dry time, they may remain in the ground for four weeks, and when the rain comes still give a good stand. The work of chopping out the plants in the drill to a stand 12 to 15 inches apart is commenced as soon as the plants are firmly set, that is, when they have a height of about 5 inches and the third, or first true leaf, makes its appearance. The after cultivation consists usually of four hoeings and four plowings, to keep the plants free from grass and surface soil light and porus. These are completed from the last of July to the 1st of August. The plant attains a height of from 10 to 15 inches before blooming, and the first blooms make their appearance from the 1st to the 20th of June. The first open bolls are seen from the last of July to the middle of August. Picking commences about the middle of August or 1st of September. By the 10th of November the cotton is generally all picked. Black frost in this region occurs sometimes as early as the 20th of October, but is not counted on until the middle of November, and it is sometimes deferred as late as the middle of December. Cotton attains a height of 2 to 4 feet. It is most productive at 3 feet. Fresh upland, unmanured, yields from 300 to 1,000 pounds of seed cotton, the average being about 600 pounds. Under good cultivation, even without manure, five crops may be taken without diminishing the yield; 1,200 pounds of seed cotton, on an average, will yield a bale of 400 pounds of lint.

In Colleton County the farms on which cotton is planted vary in size from 50 to 200 acres, and are in some instances as much as 400 acres. The labor is chiefly performed by negroes. Wages vary from $6 a month to from $120 to $150 a year.

In Williamsburg County the farms on which cotton is planted vary in size from 100 to 600 acres. The wages average about $8 a month.

In Clarendon County the usual size of a cotton farm is 80 acres. The condition of the laborers is good, and about 5 per cent. of them own houses and lands. Land is worth from $3 to $5, and rents for $1 per acre.

In Horry County the farms average 50 acres, and run from 10 to 200 acres in size. All supplies are made at home. The laborers are largely white natives, but there are some negroes. Wages range from $5 to $16 by the month, and from $50 to $125 by the year. The soil improves under culture. The wages system is preferred. The condition of the laborers is good, and about 12 per cent. of the negroes own houses and lands. Unimproved land sells from $1 to $2 an acre.

After the cotton is picked it is prepared as rapidly as possible for market. The ginning season closes about the Christmas holidays, by which time the entire crop has been gathered. Several kinds of gins are used. About half of the gins are run by steam power. The cotton is generally packed in lever presses, the old screw press having almost entirely fallen into disuse. The bales of cotton weigh, on an average, about 500 pounds, and are covered with gunny bagging and banded with iron ties. From Horry County the cotton is usually shipped by sailing vessels to New York, the total charges ranging from $3 to $3.50 per bale, and from the other counties the shipments are generally made by river and rail to Charleston at a cost ranging from $3 to $5 per bale.

The total cost of cotton production in this part of the State ranges from 5 to 10 cents per pound, according to the seasons. The average cost of cultivating an acre of cotton is about $31.32, and it is estimated that the average net profits per acre will amount to about $13.68.

THE CENTRAL COTTON REGION.

The upper pine belt of South Carolina, or the central cotton region of the State, contains about 6,000 square miles of territory, about one-sixth of which is swamp and the remainder uplands. It comprises generally the counties of Barnwell, Orangeburg, Sumter, Darlington, Marlboro', and Marion, and portions of Hampton, Colleton, Aiken, Kershaw, and Chesterfield. It has a population of 221,409 or 35.5 to the square mile. The percentage of colored population is 60 against 63 in 1870. The area of tilled land is 948,521 acres, being 152 acres to the square mile, or nearly one-fourth of the entire surface. It is 4.2 acres per capita and 21 acres to the head of live stock. These lands, being of easy tillage, not unfrequently 45 acres, exclusive of small grain, is well cultivated to the mile.

More than one-third, or 358,505 acres, is in cotton, which is 9½ per cent. of the entire surface, and 26 per cent. of the cotton acreage of the State. It is 10 acres to the work animal and 1½ acres per capita of the population; 418,417 acres are in grain crops of all kinds, including corn, small grain, and rice; 169,796 acres are in fallow and in other crops. The farms number 19,649, averaging nearly 50 acres of tilled land to the farm, which is the largest average in the State. Their relation, however, to the population is about one farm to 12½ of the population.

The uplands in this section of the State consist of a fine, light, gray, sandy loam, resting on a subsoil of red or yellow clay. In the east, in Marlboro' and Marion, it is usually found at only from 3 to 4 inches; in the west it is often deeper, and a subsoil of yellow or red sand intervenes between it and the surface soil; even here the depth to clay is seldom as much as 2 feet.

The soil of the river swamps is of a mulatto or mahogany color, and is a heavy alluvial loam, rendered lighter sometimes by an admixture of fine sand and mica, when they are called isinglass lands. Such swamps are found on the banks of the Savannah, the Santee, the Congaree, Wateree, and Pee Dee Rivers, varying from narrow strips to broad bottoms 6 and 8 miles in breadth. Such soil, well cultivated, yields, without manure, 1,200 to 1,500 pounds of seed cotton, and from 40 to 75 bushels of corn. These lands were being rapidly cleared and cultivated anterior to the war. Since then they have been to a great extent abandoned for the higher and more easily tilled uplands. The freshet of 1865 broke the dams on the Great Pee Dee, which excluded the freshets, and they have never been repaired. These lands are subject to overflow, and the erection of levees for protection has been only practiced here and there by large planters.

The other swamp lands of this section occur on the smaller streams. The soil is black, consists largely of decomposed vegetable matter, and has a depth of from 3 to 15 feet, resting upon a stratum of white sand.

The agricultural products are of the same general character as in the rest of the State. A mixed system of farming is practiced, and where improved methods of cultivating the crops and high fertilization have been put into operation the results have been favorable and the profits largely increased. In 1880 the cotton product of this region amounted to 148,050 bales, as against 83,210 in 1870, an increase of 70 per cent., or 28 per cent. of the cotton crop of the State. The yield was 327 pounds of lint cotton per capita. The yield per acre averaged 202 pounds of lint. In Marlboro' County the yield per acre averaged 267 pounds of lint cotton, and the yield per capita was 536 pounds of lint cotton. The grain crop was 3,631,302 bushels, an increase of 1,500,000 bushels as compared with the returns of 1870. This included corn, small grain, and rice, and constituted 21 per cent. of the grain crop of the State. It was 16 bushels per capita of the population, and 8.6 bushels per acre. The maximum average product was attained in Marlboro' County, and amounted to 10¼ bushels per acre, or 20½ bushels per capita of population.

As Marlboro' County is, perhaps, the most progressive agricultural county in the State, it will not be uninteresting to give a somewhat extended account of the characteristics of the soil and the methods pursued in its treatment. The six middle townships running across the county north and south compose a very fine and fertile farming country. This belt is about 20 miles in width, and in its general features corresponds with the ridge running through the State from the North Carolina border to Augusta, Ga. The soil is a rich, sandy loam resting upon a bed of strong red clay, about 2 feet in thickness and from 6 to 10 inches below the general surface of the ground. This clay rests upon a layer of gravel, which, in turn, is based upon a stratum of chalk or pipe clay, which rests upon a bed of quicksand. This peculiar geological formation keeps the ground moist, and contributes to the strength and productiveness of the soil. The lands through this section are well settled, and are worth, on an average, $20 an acre. The people of the county are generally engaged in agricultural pursuits, and have driven the plow since the war with most encouraging results.

The style of farming has entirely changed, and only the most improved methods are now used in the cultivation of the soil. Scientific theories have been reduced to actual practice, and the yield of the different crops has been increased during the last ten years at least 50 per cent. Deep plowing, high fertilizing, new implements, and improved drainage have, in every instance, increased the crops and brought the soil into a very high state of fertility. Before the war the lands lying along the banks of the Great Pee Dee River were considered to be the most valuable in the county, but by improved farming the table land of the middle part of the county has been brought up to almost equal productiveness.

THE METHODS OF CULTIVATION.

The cultivation of the soil on the farms which are conducted on improved principles is very thorough. In January or February the ground is broken up with a turning and a subsoil plow, the rule being to throw up the soil for about 3 inches with the turning plow and then to break it with a subsoiler to the depth of 8 inches, or as deep as 10 inches on the best land. This keeps the land open, makes the soil thicker, preserves the dampness, prevents drought, and at the same time acts as an excellent system of drainage. The average plowing is about 3 inches deep, which is as much as the land will stand or the crops need after the first heavy breaking up in the winter.

For corn the ground is usually bedded about the 1st and the seed planted about the 10th of March. Cotton is bedded the 1st of April and planted from the 10th to the 20th. The cotton seed for manuring are sown in February, when the first preparation of the land is made for the crops. In fields where cotton has been grown a center furrow is run in the old rows, and new rows are laid off from 3½ to 4 feet apart. In these furrows from 25 to 30 bushels of seed are sown to the acre. The furrow is then listed on with a scooter or bull-tongue, two furrows being made to the row. Then, about April 1, the top of the row containing the cotton seed is dragged off with a board in sandy soil, or with a shovel plow in stiff land, and the guano, 200 pounds to the acre, is sown on the top of the cotton seed without disturbing the seed, leaving about one-half inch of earth between the seed and the guano. The dirt is then ridged on the guano, with a small shovel or Walt plow, 4 or 5 inches deep. The middles are then cut out, the middles of last year becoming the furrows of this. The seed are then planted, with patent drillers, 2½ to 3 bushels to the acre.

Before planting, the seed are rolled in land plaster and sand, which keeps them from clinging together and makes them drop freely. The seed are drilled about an inch deep and is then covered with a plank or block of wood—a common round block 30 inches long and weighing 30 pounds being considered the best. In fields where there are no stumps a block 8 feet long, weighing 60 pounds, and with a capacity of covering two rows at the same time, may be used. This mode of covering leaves the surface open, and does not pack it like a plank or slide.

The seed will come up, with favorable seasons, in about two weeks.

After it has come up every other row is run around with a 12-inch sweep, when it is chopped out with hoes, leaving from 6 to 8 inches between the stalks in the rows. After the crop has been chopped out a sweep is run around the other unplowed side of the rows. It takes thirteen furrows to the row to get the ground ready to plant, and after the seed has come up it requires four plowings and as many hoeings before the crop is in a condition to "lay by."

Shallow cultivation is regarded best for a deeply prepared soil. Topping the cotton is not considered necessary. The weed grows to an average height of 3 feet, and is generally matured by August 10, or is fully organized for a crop by that date, and has as much fruit on it as it will bear. The first picking is ready by August 25, and the average yield to the acre is from 1,000 to 1,500 pounds of seed cotton, or a bale of 300 to 500 pounds.

The yield has been greatly improved of late years by the use of the finer varieties of seed, or by mixing early and late seed. Before the war the average yield of cotton to the acre was from 400 to 500 pounds in the seed; many did not make more than one bale to two acres. The profits now, compared with the old system of farming, will run to fully 33 per cent. Ten per cent. profit on the whole investment was a full average before the war. Now the percentage of clear profit will reach not less than 25 per cent. The profits on the fertilizing, gathering, and making of the crops will be all of 50 per cent.

The cotton picking is not near so clean as before the war, but the lint is rather better, which results from improved ginning and land. The fiber is stronger and better, and there has been a marked improvement in the seed, producing more lint, better stalk, a more vigorous growth, and an earlier crop. The crop is now ready for market two or three weeks earlier. The last of the cotton crop is generally ready for the market by December 15.

By high fertilizing and deep cultivation the lands have been steadily improving and have increased fully 50 per cent. in value.

THE CULTIVATION OF CORN.

For the corn crop the ground is prepared in February, and is broken up or bedded very deep. It is planted in rows 6 feet apart, 3 feet to the drill, and two grains in the hill. After the seed has come up it is thinned out to one stalk in the hill. The crop is plowed four times the two first plowings tolerably deep, and the last two shallow. At the third plowing pease are planted in the rows. The fodder is pulled in August, and is worth $1 per hundred pounds. The corn is gathered about the middle of October, and is worth $1 per bushel. The average yield to the acre is 15 bushels, but highly cultivated fields have yielded as much as 40 bushels to the acre. On the river or swamp lands the average yield is 25 bushels. The yield of pease is 5 to 7 bushels per acre. They are worth $1 per bushel.

The ground for the oat and wheat crops is prepared in October, if the seed is to be sown after the corn crop has been gathered, or about the last of November if it is to be planted on cotton land, which should be broken up, broadcast or level, 3 or 4 inches deep. The seed should be sown with the guano on top of the ground and then shoveled or harrowed in. One bushel of wheat should be sown to the acre, and from two to three bushels of oats. The average yield of wheat is 15 to 20 bushels per acre, and of oats, 20 to 50 bushels. The wheat is harvested May 20, and the oats from May 25 to June 1. Peruvian guano, 150 pounds to the acre, sown with the grain, is considered to be the best and safest fertilizer.

In harvesting the grain improved reapers are used instead of the old hand "cradle," which was the only implement known before the war. After the grain is cut, the ground is harrowed, and a crop of grass raised. The common crab grass is generally sowed, and yields 1,000 pounds to the acre. It is cut with a mower and gathered with a horse-rake, 10 acres being gathered and stacked in this way a day. This hay is worth $20 per ton, and furnishes a fair feed for horses and cattle. No attention has yet been given to the cultivation of the fine grasses, although clover has, in several instances, been cultivated with very gratifying results. Pease are also plowed in after the harvesting of the grain crops, and make a fine yield. When drilled one-half bushel is planted to the acre, or, when sowed broadcast, one and a half bushels. The drilled crop yields 8 to 10 bushels to the acre; sowed broadcast, they are cut for hay.

The cultivation of the pea is a great improvement to the land. If the vine is cut when it is green and the roots are then turned under, the benefit to the land will be fully twenty-five per cent.

THE UPPER AND MIDDLE COUNTRY.

A notable feature in connection with the agricultural development of South Carolina, since the war, is the great extension of cotton cultivation. As the result of improved methods of farming, and the use of commercial fertilizers, the cultivation of this crop has been extended northwardly until now the cotton plant is successfully grown at the foot of the mountains, and indeed upon the rugged slopes of the great Appalachian chain. Greenville, Oconee, and Pickens Counties, which form the highest territory in the State, now produce a large quantity of cotton, the yield in 1880 aggregating in these three counties 26,573 bales.

Taking the figures for the same year in Greenville County, the total acreage devoted to this crop was 45,349 acres, and the total yield footed up 16,999 bales. In Pickens County 18,463 acres were planted in cotton, which yielded 5,756 bales; and in Oconee County, with a total acreage of 13,595, the yield amounted to 3,818 bales. In these counties before the war but very little cotton was produced, and the figures given show the constant expansion of the crop and the adaptability of the soil of the mountainous section of the State to the successful cultivation of the fleecy staple.

Possessing as it does an unequaled climate and a soil of great fertility, Upper South Carolina contains some of the best farming lands in the State. These lands have been improved by judicious treatment, and have been greatly enhanced in value by the construction of new lines of railroad, which furnish an easy outlet to market. The clayey and sandy soils predominate in this section and yield abundant harvests. They are especially adapted to the cereals and the grasses, and produce large crops of cotton. The cultivation of tobacco is also prosecuted, although to a very limited extent.

All varieties of fruit are grown, and during the past few years considerable attention has been paid to the cultivation of the vine and the manufacture of wine. The grape flourishes in the Piedmont country especially, and although but little wine has yet been manufactured for commercial purposes, some very encouraging specimens of native grape wines have been produced. In Greenville County several vineyards have been planted and considerable capital invested in this particular industry. Seeing the necessity of diversifying the interests of the farmers, the State legislature has passed a law exempting domestic wines from taxation, and under the existing favorable conditions it is confidently expected that the cultivation of the vine, will in a few years form a most important branch of industry, and be the means of increasing the revenue of the agricultural population. The introduction of foreign immigrants from the wine countries of Europe, to which some attention has been given, looks to the development of the natural resources of the State in this direction. A great deal of the land in the up country is so rugged and broken up that it cannot be profitably used for ordinary agricultural purposes, and the cultivation of the grape will be an excellent aid to the farmers of this region. As an indication of the progress already made in the cultivation of the vine, it is stated that in 1880 410 acres of land in South Carolina were devoted to vineyards. The total yield of grapes sold was 30,258 pounds, amounting in value, at 15 cents per pound, to $4,538.70. The wine made amounted to 17,422 gallons, footing up in value, at 50 cents per gallon, to $8,711—or from this source alone the farmers of the State realized $13,249.70, just so much surplus added to their revenue from a hitherto uncultivated and greatly neglected source.

Although there are only a few farms in the State devoted especially to the cultivation of fruit for shipment to market, nearly every farmer is now doing something in this line. The farmers of no other Southern State have, perhaps, invested more during the past six years in the purchase of the best varieties of fruit trees from the nurseries located in both the Northern and Southern States. The total acreage planted in apple trees is 6,653 acres, which yielded, in 1880, 65,426 bushels; and the total acreage planted in peach trees is 8,917 acres, which yielded 81,009 bushels. The total value then of the peach and apple crops in 1880 amounted to $78,034. To show the large profit in fruit growing, a farmer in Edgefield County states that he made more clear money in 1881 on 9 acres of peaches than he did on 100 acres of cotton.

In describing the upper half of the State, although the subject is well worth the time and attention, it will hardly be necessary to go into so minute details as in the lengthy descriptions which have been given of the Sea Islands, the rice-growing region, the central cotton belt, and the phosphate deposits of the State. It will be sufficient for the purposes in view to take in connection with this great division of the State, the Sand Hill region, under which general head is contained the red hills and the ridge lands of the middle country; the cold gray lands, the red lands, and the flat woods, meadow and black-jack lands of the up country, and the rough and broken country of the Piedmont belt. The products of this section, which embraces so large and fertile a portion of the State, do not materially differ from those of the other sections of the State already more particulalry described. The methods of cultivation and the conditions of labor are also similar.

The soils of the up country are susceptible of the highest improvement and the large proportion of the agricultural products of the State comes from this section. This proposition will appear more evident when it is said that the total value of the farm products of the up country amounted in 1879–'80 to $21,905,240—more than half the value of the agricultural productions during the same year of the entire State. Unfortunately the farmers draw the larger part of their grain and provision supplies from the Northwest, on account of the ruinous system of agricultural advances adopted immediately after the close of the war; but it has been demonstrated beyond all question that the up country of South Carolina could easily produce a sufficient quantity of breadstuffs to supply the entire State.

The red lands of this section, with judicious fertilizing, and the alluvial lands lying along all the rivers and streams, produce large crops of corn and small grain, and one instance is given of a yield of 160 bushels of corn on one acre of land. The average yield of corn under ordinary cultivation is from 8 to 15 bushels to the acre. The average yield of wheat ranges from 15 to 25 bushels per acre (of course upon the presumption that the seasons are favorable and the other conditions of good seed and fair cultivation), and the average yield of oats ranges from 25 to 50 bushels to the acre, according to the quantity and character of the fertilizers used, the preparation of the ground, the quality of seed sowed, and the conditions of the seasons. In several instances as much as 100 bushels of oats have been produced to an acre of ground, but of course this has only been the result on "experimental acres." It shows, however, the possibility of increasing the productiveness of the soil by proper methods to a practically unlimited extent.

Among the agricultural changes in up-country farming may be noted the general improvements in the implements of husbandry and the general disposition of the farmers to use labor saving machinery. This is apparent in the kind of plows employed in turning up the soil, in the use of seed planters, guano distributors, patent threshers, and improved condensing gins run by steam and water power—the object being to secure the greatest execution with the least physical exertion.

Another very important change that has taken place in the agriculture of the State is the abolition of the old law requiring the inclosure of all fields under cultivation, and the adoption of the "no fence system," under the operations of which the stock are prohibited, under heavy penalties, from having a free range, and the crops can be grown without the serious tax upon the resources of the planters heretofore entailed upon them by the construction and maintenance of fences. To give a fair idea of the tremendous drain upon the resources of the farmers by the old system of fencing it is only necessary to state that the cost of building and repairing fences in South Carolina in 1880 amounted in the aggregate to $917,000. Four or five years ago several of the upper counties secured the passage of an act by the legislature repealing the old law, and the system of fencing in the cattle and fencing out the crops has worked with so much success that a general stock law was enacted at the recent session of the general assembly, which, with the exception of a small section of country, will go into effect throughout the State in April, 1882.

The passage of this law has created considerable dissatisfaction among the poorer class of people, the non-landholding population, on the ground that it will act with especial hardship upon their interests, but there is little reason for such a conclusion, inasmuch as in those counties where the stock law has been in operation for years the condition of the poor people has steadily improved. One of the advantages of this law is that it gives the farmer the opportunity of investing the large sums of money heretofore devoted to the building and repairing of the fences in the permanent improvement of his holding, and in the purchase of labor-saving machinery for the better cultivation of his crops.

Another benefit that will certainly result from the operations of the stock law is the great impetus that will be given to the improvement of the farm stock and milch cattle. Heretofore but little attention has been given to stock raising. Large numbers of cattle, it is true, have been raised in the State, but the value of improved breeds has never been fully appreciated. The enactment of the stock law will necessitate the reduction of the stock and cattle held by the farmers, but it will, at the same time, encourage the establishment of stock farms and the improvement of the breeds. Already experiments are being made in this direction, and several stock farms have been started in the State. Instead of the scrub cattle and ill-favored hogs which have all along excited the derision of more progressive people the farmers are beginning to import the Jersey, Durham, and other improved breeds of cattle, and the Berkshire, Essex, and other improved porkers. So that what may be lost in the numbers of cattle and hogs will be more than counterbalanced by the higher prices and larger products that will be obtained from the very admirable new departure in this direction.

To give an idea of the operations of the stock law in increasing the dairy products of the State, and so contributing to the support of the farm, let a comparison be drawn between three counties in which the "no-fence law" has been in force for several years and three other counties in which the old law has been retained. Take, for instance, Abbeville, Anderson, and Chester Counties on the one hand, and Charleston, Beaufort, and Colleton Counties on the other. In the former counties in 1880 there were 14,906 milch cows, which produced 660,296 pounds of butter, amounting in value, at the rate of 20 cents per pound, to $132,051.20. In the latter counties there were 19,610 milch cows, which produced only 77,950 pounds of butter, amounting in value, at 20 cents per pound, to only $15,590.

But the force of the comparison would be partially lost if the important statement were not made just here, that the anti-stock-law counties above named contain a larger area of territory than the counties with which they are compared, and possess some of the finest grazing lands in the State. The inevitable result is, therefore, in favor of the stock law as an indispensable auxiliary in this State to the profitable raising of cattle, and the increased productions that will necessarily result from improved stock. The idea is that one cow is better than a dozen, if, by proper care and attention and the right kind of breed, she can be made to give a larger yield of milk and butter than a dozen other animals of ordinary grade. Certainly so far as the man of moderate means is concerned, the desirability of a law that insures such results as those above given can not be successfully questioned.

LABOR AND WAGES.

The great question which lies at the root of agricultural prosperity in South Carolina is that of labor. Several systems have generally been adopted, each of which has its advantages and its defects. The plan adopted immediately after the war as a matter of necessity, and under which the greater part of the cotton crop is produced, is what is known as the share system. It is considered by many as defective, fallacious, and objectionable on the ground that under its practical operation the lands have deteriorated and the value contracted, while there has sprung up a slovenly and unremunerative system of cultivation. It is contended that to make agriculture what it should be the planter should control his labor, superintend the cultivation of the soil, and hold in absolute discipline the forces by which he expects to harvest his crop after making it.

On the other hand, some of the most successful and prosperous farmers in the State say that they can make more under the share system than during the days of slavery, when they owned the laborers as well as the land. Under this system the laborer generally gets one-third of the crop where he feeds himself, one-fourth of the crop where he is fed, the land owner furnishing everything necessary to make the crop, out of which the laborer's proportion of the expenses is taken. In a majority of cases the land-holders furnish and feed the stock, and the tenants furnish the labor; in other cases, where the land-holders furnish the supplies they secure themselves by a lien on the one-third of the crop going to the tenant, or the laborer gives a lien to the merchant upon his share of the crop. A large number of the liens are given by the laborers to the land-holders who furnish the supplies, themselves dealing directly with the merchants. A great many farms are rented for a specified number of bales of cotton, the tenants making their own terms for supplies. In some cases the land is farmed at $10 an acre, the laborers finding themselves and the land-holder furnishing the land and the necessary implements to make the crop.

Of course the earnings of the laborer depend altogether upon the character of the soil, the kind of seasons, the state of the markets, and the thoroughness of cultivation. In many cases where the conditions have all been favorable, the laborers have been able to acquire some property on their own account, but generally speaking it has been difficult to earn more than a modest living.

The wages system, under which the laborer receives a certain stipulated amount of money by the month or year for his services, is thought by many to be the best in every way, both for the laborer and the employer. The wages paid common agricultural laborers run from $5 to $10 per month, and rations consisting of three pounds of bacon and one-quarter of a bushel of meal a week. The average price for good field hands is about $8 a month the highest price paid not being more than $15 a month.

Under this system it is claimed that the laborer will do better work, live more contentedly, and not be so entirely dependent upon the contingencies that regulate the earnings of those operating under the share system. This much can certainly be said in its favor: knowing just exactly what he has to depend upon the diligent and economical laborer can bring his expenses within his income, and by frugal living lay by something of his hard-earned wages for a rainy day. The wages paid for the best hands is not large, but common necessities of life can be obtained at moderate figures, especially when the bills are to be paid in ready money and not on long credit. The wages paid to agricultural laborers in the State in 1880 amounted to $5,981,616. The smallest amount paid in any of the counties was in Horry County, where the sum only reached $22,000. In Laurens County the amount paid in wages was $642,474.

SMALL FARMS IN SOUTH CAROLINA.

One of the most noticeable changes in the agriculture of the South produced by the war is the many and vast changes that have been made in the ownership of real estate. Prior to the war the great bulk of landed property in the Southern States was held by comparatively few of the population. Immense plantations, containing thousands of acres, were the rule; small farms the exception. The conditions have been revolutionized, and now a large percentage of the real estate in almost every Southern State is held by small owners. The immense tracts of land, which made the Southern planter in reality "lord of all he surveyed," have been subdivided into smaller holdings, and there has been a general distribution of property, just as there has been a wide diffusion of intelligence among the masses, and an enlarged conception of the duties, rights, and responsibilities of citizenship.

Under the old system of slavery the land was farmed by its owner, who also owned the labor and reaped the entire benefits of his agricultural operations. The subdivision of large plantations is very marked, as shown by the statistics of the last census taken, in comparison with the three preceding decades. In 1850 there were in South Carolina 29,967 farms; in 1860, 33,171 farms; in 1870, 51,889, and in 1880, 93,864 farms. During the decade from 1860 to 1870 the normal course of affairs was disturbed by a four years' war. It is by comparing the increase in the number of farms between 1870 and 1880 that the effects of emancipation in this particular can best be estimated. During the former decade the rates of increase in South Carolina, Georgia, and Alabama were, respectively, 10.7, 19.8, and 31.3 per cent. During the latter they were 80.9, 98.1, and 101 per cent. That is, the rate of increase in the number of farms was in South Carolina nearly eight times, in Georgia nearly five times, and in Alabama considerably over three times as great between 1870 and 1880 as it was between 1850 and 1860. In Florida the rate of increase was 52.6 per cent. between 1850 and 1860, and 128.8 per cent. between 1870 and 1880.

The proportion of tenant farmers in South Carolina is much greater than formerly, and has been rapidly increasing for some years. In this State, there were in 1880, 46,645 farms occupied by the owners; 21,974 farms rented for a fixed money rental, and 25,245 farms rented for shares of the produce. The distribution of the gross number of farms, by classes according to acreage, was 7,153 farms under 10 acres; 12,519 farms of 10 acres and under 20; 27,517 farms of 20 and under 50 acres; 13,612 farms of 50 and under 100 acres; 27,735 farms of 100 and under 500 acres; 5,328 farms of 500 acres and over.

The distribution of farms, by classes of farms occupied by their owners according to acreage, was 1,202 farms under 10 acres; 2,609 farms of 10 and under 20 acres; 5.914 farms of 20 and under 50 acres; 8.750 farms of 50 and under 100 acres; 23,358 farms of 100 and under 500 acres; 4,812 farms of 500 acres and over.

The distribution of farms occupied by persons paying rent at a fixed value in money, by classes according to acreage, was 4,464 farms under 10 acres; 5,096 farms of 10 and under 20 acres; 8,443 farms of 20 and under 50 acres; 1,866 farms of 50 and under 100 acres; 1,811 farms of 100 and under 500 acres; 294 farms of 500 acres and over.

The distribution of farms occupied by persons paying rent in shares of the produce, by classes according to acreage, was 1,467 farms under 10 acres; 4,814 farms of 10 and under 20 acres; 13,160 farms of 20 and under 50 acres; 2,996 farms of 50 and under 100 acres; 2,566 farms of 100 and under 500 acres; 222 farms of 500 acres and over.

To those who, in the South and elsewhere, believe that agricultural prosperity and independence depend in a great measure upon the subdivision of huge tracts of land into smaller and more manageable estates, and that the acquisition of landed property by intelligent laborers makes them better citizens and larger producers, these figures are very gratifying. They show the rapid progress which has been made since the war in this direction, and that if the present tendency toward the segregation of land continues, the South will, in the course of years, be as advantageously situated in this respect as France or Belgium is to-day. The figures may be more fully understood and appreciated by considering the percentage of increase in the number of farms in South Carolina during the last three decades, as shown by the following table:

Number of farms in South Carolina.

Years.	Number of farms.	Increase in decade.	Per cent. increase.
1850	29, 967	....	....
1860	33, 171	3, 204	11
1870	51, 889	18, 718	56
1880	93, 869	41, 975	81

These figures indicate without further explanation the rapidity with which South Carolina is becoming a State of small farms. It is shown that the increase in the number of holdings between 1870 and 1880 was nearly eight times as great as between 1850 and 1860.

It has been deemed better to give in the following table the increase since 1860 than from 1850, as the period from 1860 to 1880 represents the South under its conditions of general freedom and consequent agricultural change.

NUMBER OF FARMS.

States.	1860.	1880.	Increase in number.	Per cent. increase.
Alabama	55, 128	135, 864	80, 736	146
Arkansas	39, 004	94, 433	55, 429	142
Delaware	6, 658	8, 749	2, 091	31
Florida	6, 568	23, 438	16, 870	257
Georgia	62, 003	138, 626	76, 623	124
South Carolina	33, 171	93, 864	60, 693	183

It will be seen that even under the vastly better circumstances attending most of the other States in the list, South Carolina's farms have increased to an extent not equaled by any save Florida, which was a comparative wilderness in 1860 and has since enjoyed the benefits of Northern capital and white immigration. Other results of the comparison are that Alabama, which has not thriven until recently, has eclipsed Georgia and Arkansas, which have had several years' start of her in prosperity. Delaware, of course, cannot be compared with any other State in the list, yet the figures serve to show what may be termed a normal rate of increase as compared with the enormous expansion of the States further South.

The following table shows the percentage of the total number of farms in the States above mentioned, in 1880:

States.	Under 100 acres.		Under 500 acres.	
	Farms.	Per ct.	Farms.	Per ct.
Alabama	85, 097	63	129, 351	95
Arkansas	54, 016	57	91, 992	97
Delaware	4, 043	46	8, 674	99
Florida	15, 847	68	22, 409	96
Georgia	74, 483	54	128, 118	92
South Carolina	60, 801	64	88, 536	94

South Carolina, a State considered to be taken up in large estates, has a larger percentage of farms under one hundred acres than Delaware, Arkansas, Alabama, or Georgia, and is surpassed only by Florida, where the mania for orange groves doubtless accounts for the increase. South Carolina has also proportionately more farms of less than 500 acres than Georgia, but is surpassed by the others. Arkansas has more of this class of farms than any State except Delaware, whose area in estates of more than 500 acres aggregates only one one-hundredth of the whole.

For the purpose of comparison, in the following table, which shows the number of farms cultivated, severally by the owners, and by tenants at a fixed rental or for shares of the crops, the figures are given for each of the States already mentioned, together with the percentages of each class of farms as compared with the whole number.

FARMS OCCUPIED.

States.	By owners.		On fixed rental.		On shares.	
	Number.	Per ct.	Number.	Per ct.	Number.	Per ct.
Alabama	72, 215	53	22, 888	17	40, 761	30
Arkansas	65, 245	69	9, 916	11	19, 272	20
Delaware	5, 041	57	511	6	3, 197	37
Florida	16, 198	69	3, 548	15	3, 692	16
Georgia	76, 451	55	18, 557	13	43, 618	32
South Carolina	46, 645	50	21, 947	23	25, 245	27

South Carolina has fewer farms occupied by owners than any other State, the number reaching just one-half of the total. Arkansas and Florida have the largest percentage so conducted, the number being 69 per cent. of the whole in each of these States. South Carolina has the highest percentage of rented farms, the number being 23 per cent. of the whole; and Delaware the lowest, only 6 per cent. of her total. Of the farms occupied by persons paying rental in shares, Delaware, curiously enough, has the largest proportion, 37 per cent. of the whole. It would have been thought that the lower belt of States practiced this method to a greater extent, but the percentage ranges from 16 in Florida to 32 in Georgia.

It appears to be proved by these comparisons that South Carolina, having a larger normal increase than the other States in the number of farms, a larger percentage of small tracts, and a larger proportion of land cultivated by renters and on shares, has advanced more toward the small-farms system than any of her sister States. That within her borders the small farmers are more numerous, and cultivate a larger proportion of the cultivable lands, there is no doubt. The results shown are directly attributable to emancipation and afford a cheering evidence of progress. Both races have made great progress in the acquisition of landed estates.

The question of the relative value to a State of small farms and large plantations is one on which different views are held, and there is strength in the plea that the small farmer cannot hold his own against the large planter, who can fertilize highly, drain thoroughly, and use labor-saving machinery liberally. But the small farmer works himself, and his family help him, and the great point is this: Each one should be free to act according to his means and his conception of his interest. Small farmers will drop out if they cannot make a living. In South Carolina small farms are the order of the day, and there is no indication of a return to the ways of the time when the laborers were many and the owners few.

THE COLORED PEOPLE OF THE STATE.

By far the larger part of the agricultural labor of South Carolina is done by the colored people, and, notwithstanding the unsettled condition of affairs since the war, it is only just to say that the negro is the only laborer suited to the existing methods of farming. A few foreign immigrants have been brought into the State, some of whom have succeeded admirably, but the principal "stand-by" of the Carolina planter is the negro, who has been raised on the soil and is conversant with the great staple crop of the State. Under thoughtful control, and with the proper treatment, it is generally admitted that he is the best farm laborer that can be procured.

The condition of the colored people, as already stated, will compare favorably with that of the laboring classes in any civilized and progressive country. They have succeeded much better in every way since their emancipation than could have reasonably been expected, and, although the masses do not show that mental and moral improvement which seventeen years of freedom should have brought, there has been a gratifying change in the condition of the colored people during the last six years. They have their own churches and schools. They make their own contracts. The courts are open to them, in which the laws are fairly administered without distinction of race or color. They sit upon the juries and are eligible to and hold public office. Every trade is open to them, and in the different branches of industry there is ample scope for the employment of their talents and the full exercise of every energy. The development of every race and nation is indicated by the general diffusion of intelligence and the acquisition of property by the masses; and it is a gratifying consideration that the negro in South Carolina has made a fair advance in substantial prosperity.

A canvass of the counties in this State shows that the negro is building up his own fortunes and that he is gradually acquiring a property interest in the government. Many notable instances of thrift among colored farmers and mechanics could be given. No accurate account of the number of the colored property holders in the State has ever been taken, but it is a significant fact that on the sea islands alone the negroes own lands that are worth fully $500,000, acquired by hard industry and economical living. Of late years there has been an encouraging decrease in crime.

The public schools are largely attended, and the number of colored school children last year in the free schools of the State numbered 72,119 —an excess of 10,780 over the number of white children enjoying the benefits of the system. There were 1,223 colored teachers employed in the public schools of the State during the scholastic year of 1881, of whom 1,216 were native born. And so deeply impressed have the authorities been with the importance of extending the fullest benefits of the free-school system to the colored people, that a State Normal Institute has been established for the especial instruction and training of the colored teachers engaged in this work.

There is no hostility between the races in this State. No act of political violence has been practiced by white men upon negroes for years, and the Ku-Klux-Klan is only a horrible memory of the past. Labor is steady. The wages paid to common laborers are just and equitable. Contracts are equally binding on employer and employé, and since the troubles on the Combabee rice fields in 1876 there has not been anything like an organized labor strike in the State.

On account of the failure of crops and other purely local causes there has been during the recent past a heavy emigration movement of the negroes of Edgefield County to the West, but elsewhere throughout the State the conditions of labor have been unaffected by this sporadic and ill-advised effort to hunt more prosperous homes in the fresh countries of the Western and Southwestern State.

The negro masses are gradually eschewing politics, and the only element of irritation between them and the white people is created by the bitter harangues of designing politicians during the excitement always attending popular elections, and the friendly relations between the races are, year by year, becoming better assured. There is an interdependence of interests between the two classes of people. The good fortune of the white man is a direct benefit to his colored neighbor, and the same legislation necessary to secure the property interests of the white capitalists will promote in equal degree the prosperity and happiness of the colored laborer. The white planter cannot get on without the skillful and competent help of the colored farm laborer. And this mutuality of interests will bring about the best solution of the race problem, concerning which the speculative politician has made so many prophesies which have failed to be fulfilled. The white man will do nothing that will destroy the efficiency of the colored man as a laborer, and the negro will in time have to stand by those upon whom he is dependent. And then will come that political millenium for which every true patriot has so long and so devoutly prayed.

THE LIEN LAW AND ITS OPERATIONS.

South Carolina has made a great advance in the development of her agricultural interests since the war. Many changes have been made in the methods of cultivating the soil and in the systems of farming. Labor-saving machinery is employed in every department of industrial effort, the crops are rotated, improved seed are used, and the facilities for planting, cultivating, and preparing the crops for market constitute favorable conditions for the still further advancement of agriculture And yet it is true that only a small proportion of those exclusively engaged in farming make it profitable. There are not a few who fail each year to realize sufficient from their crops to cancel the indebtedness incurred in making it. The causes that have produced this condition of affairs are numerous.

Nothing, perhaps, has contributed more to the financial embarrassment of the planters of the South than the exclusive culture of cotton. Every farmer admits this and realizes it, but the problem with him is how to change from this plan to a diversified system of farming. Unfortunately the results of the war left most of the farmers with very little more property than the land itself. Cotton commanded high prices, provisions sold in proportion, and the temptation to make large crops of cotton was too great to be resisted. Advances of money and goods were obtained at "flush" prices, and when the crops were gathered the yield and prices were not sufficient to pay the cost of production; and the next year the same plan was followed with like results. The old debts contracted when prices ruled high are keeping the people poor.

FARMING ON ADVANCES.

The farmers are compelled to borrow money from the beginning of the year almost to its close, and before they can get it they are obliged to pledge themselves to plant enough cotton to secure the party who makes their advances, because cotton is ready money at all times, and the creditor can, on its delivery, realize his dues. There seems to be only two ways in which the farmers may find relief: The first is by borrowing money at a fair rate of interest on long time by mortgage upon realty, and the other by the strictest economy and by gradually reducing the cotton acreage and increasing the production of home supplies, to work out of debt. Credit has a fascination for all, and when easily obtained we are not careful enough for what it is pledged. If the same care and thought were bestowed upon every article purchased for credit as upon that bought for cash the saving in a year would be immense.

It is said that a few years ago the farmers of the West were on the verge of bankruptcy, and were only saved by the capitalists of the East, who relieved them of all embarrassment by lending them money upon their real estate. That some such means will be afforded the farmers of the South in the near future cannot be doubted.

The farmers of the State, as a rule, obtain credit for procuring the supplies necessary to carry on their planting operations by mortgaging their growing crops to the merchants. This basis of credit was established by the passage of what is known as the lien law, in 1866. Without the enactment of such a law it would have been impossible at that time for the farmers to have cultivated the soil. Several ineffectual attempts have been made to secure the repeal of the law. It is urged by those who favor a repeal of the law that it creates a fictitious credit, demoralizes labor, encourages reckless extravagance, acts as a barrier to more substantial credit, causes careless tillage of the land, resulting in its depreciation and ultimate exhaustion. That advances are made to some, where there is only a bare possibility of the repayment of the amount advanced, thus placing the risk of all such loans so great as to force exorbitant prices upon advances made to responsible debtors to cover losses incurred by a promiscuous credit; that the credit thus easily obtained induces and encourages those who are unable to intelligently cultivate the land to become tenants, to the detriment and injury of themselves and the land-owners; that it tends to the exclusive culture of cotton. to the neglect of food productions; that the enormous rates charged for advances under the law is making the State poorer every year; that the law is a temptation to speculation and an encouragement to improvidence; and that the State can never become prosperous until this temptation to extravagant living is removed.

On the other hand it is argued by those who oppose the repeal of the law that the necessities of the people demand its continuance; that many small farmers would suffer if deprived of this means of obtaining credit; that it would be an oppression of the laboring class, as it would place them in submission to the land-owner; that the law is not compulsory, and no one need resort to it unless his necessities demand it; that the laborer should have the same "freedom of action" as the land-owner, and that its repeal would force the adoption of the mortgage system, which is much more expensive.

Those who favor the repeal of the law reply that in addition to the liens on the crops, in many instances mortgages are also required on the stock, farming implements, &c., and that the expense would not be increased by this change; that the repeal of the law would leave all classes in the same position, and all would be compelled to borrow upon their integrity and reputation for prompt payment; that all would enjoy equal privileges; that even if any were forced to become tenants of the landlord, and look to him for advances, it would be no greater oppression than he is subjected to under the present law, and that its repeal would establish a sounder basis of credit, because credit would be made either upon the reputation of the man or upon his ability to pay. Those who oppose the repeal say that the annual increase in the number of liens given proves its necessity, and those who favor the repeal contend that it is strong evidence that the State is becoming poorer every year under its operations, because a portion of the increased number and amount of liens represents balances unpaid for previous years.

THE OFFICIAL FIGURES AS TO THE EXTENT OF THE SYSTEM.

An estimate, based upon the returns from eighteen counties of the State, for 1879, shows that in that year 50,358 liens, amounting to $4,372,753 were recorded, and in 1880, 67,518 liens, amounting to $7,359,462. The estimate for 1881, based upon returns from twenty-eight counties, shows that in that year 73,308 liens, amounting to $7,384,072, were filed. The increase of 1881 over 1879 was, in number of liens, 22,950, and in amount $3,011,319; and over 1880, in number of liens, 5,790, and in amount $24,610. The number of farms in South Carolina, by the last census, is 93,864. Deducting the number of liens recorded in 1881, it will be seen that only 20,557 farms, or less than one-fourth, were not cultivated under liens; in other words, that more than three-fourths of the farmers in the State make their crops under liens. The number of votes cast at the election in 1880, in round numbers, was 170,000, showing nearly one lien to every two voters in the State, including the votes polled in the cities, towns, and villages.

These estimates are based upon the partial reports received from the clerks of the court in the different counties of the State, and give a very fair idea of the extent of the lien trade and the large number of farmers who operate under the provisions of the law. Carrying the calculations a step farther, and the tremendous drain upon the resources of the farmer for the supplies used in the cultivation of his crop will be more apparent.

In 1879, 27,470, liens were recorded in eighteen counties, averaging $86.83 each, and amounting, in the aggregate, to $2,267,167. If, in each of the other fifteen counties, the same number of liens were recorded, averaging the same, the whole amount of liens for 1879 was $4,372,753, and the number of liens was 50,358. The State produced, in 1879, 516,490 bales of cotton, which was worth, at $50 per bale, $25,824,500. Thus it required about 17 per cent. of the cotton crop to pay the recorded liens. The merchant or factor's profit was, probably, not less than fifty per cent. (it has been estimated at 54 per cent.), or $1,457,588.

The number of liens recorded in 1880 was 67,518, averaging $109 each, and aggregating in value $7,359,462. If the crop was the same as in 1879, and sold for the same, it required about 28 per cent. to cancel the liens, and the factors probably realized a profit of over $2,000,000.

The liens are given to cover advances in the way of supplies furnished, and represent only from one-fourth to one-half of the indebtedness on the crop, the balance of the expenses being commissions on sales, interest, and incidental expenses, so that after all claims are canceled the surplus is very small and the planter is again forced to resort to the lien system to run his crop another year. The figures given show that the larger number of liens are given by small farmers, or tenants, the average amounts ranging from $86 to $109. The terms upon which advances are granted under the lien law are such as no business will justify, and the people can not prosper until they make some change in this respect. If the money obtained in 1880 under the lien law could have been borrowed at eight per cent., the difference in favor of the farmers would have been over $2,000,000.

COTTON MANUFACTURING IN THE STATE.

It cannot be denied that the agricultural prosperity and welfare of the State depend in great measure upon the development of her manufacturing interests. There is no better evidence of the truth of this statement than the results which have already been obtained from efforts in this direction. Before the war there were but few factories in the State, and the cotton crop was sold and shipped to outside markets. A large quantity of cotton is now consumed by the mills which are in operation in the State, and in this way there is a steadily growing demand for the staple which will directly benefit the planters in saving them from the exhorbitant commissions of the factors and other middlemen who have heretofore manipulated the crop from the time it has been ready for sale until finally disposed of at some one of the great shipping ports of the country. In other words, the field and the factory are being brought into more intimate association to the great advantage of both the producer and consumer.

The belief has long prevailed that the manufacture of cotton, in a cotton-producing State, must necessarily pay well, by reason of the cost of the raw material, by the saving in commissions and charges of transportation, by the saving in waste, in the rental of land or its capitalized value, and in the wages to be paid to operatives. It is contended that South Carolina mills could sell ordinary yarns in New York at the price which it would cost the mills in New England to make those yarns, and still realize a considerable profit. The experience of past years has established the truth of the position, and although it is not claimed that the Southern mills can compete with the finer grades of yarn, it is admitted by manufacturers of both sections that the Southern mills will, in a few years, have the market for the coarser grades of cotton goods under control. Of course everything that has been done in the development of cotton manufactures has been a direct and almost incalculable benefit to the planters; for, to the extent in which cotton produced in South Carolina is manufactured in the State, the whole of the profit upon that cotton, from its first stage to the last, remains in some form within the State for the benefit of the people of the State, and especially to the advantage of those who produce the staple.

More than ten years ago the Charleston News and Courier formulated what is now an accepted truth, in declaring that the remedy for commercial distress in the North, and the secret of sure fortune in the South, was to bring the mills to the cotton, and upon this line have the press and people of the State been working with the most gratifying results. When the cotton is produced here and manufactured elsewhere South Carolina is in the position of furnishing the elements which make other communities rich. This is being changed. The pound of raw cotton which is worth in South Carolina 10 cents is converted in a South Carolina mill into a quantity of yarn 15 per cent. less in weight, which 15 per cent. represents the loss in manufacturing. This yarn will sell in a South Carolina or in a Northern market at an average of 22 to 23 cents per pound, and the whole of the difference between the 10 cents for the raw cotton is the price of the yarn made from it is additional profit reaped by the people of South Carolina on every pound of cotton which they can manufacture in the State.

During the past year there has been unwonted activity in developing the cotton manufacturing interests of the State. Two new factories have been built and are in full operation. These are the Clifton factory, near Spartanburg, which runs 2,000 spindles, and the Rock Hill factory, in York County, which runs 1,800 spindles. The Piedmont factory, near Greenville, has doubled its capacity and has 24,000 spindles and 500 looms. A factory is now in course of construction on Fishing Creek, in Chester County, which will run five Clement attachments, with spindles and machinery in proportion, on a capital of $5,000. The Bellemont's factory, in Sumter County, is nearing completion. It has a capital of $100,000, and will run 1,200 spindles. The Charleston cotton mill has a capital of $500,000, and will run 20,000 spindles and 480 looms. A cotton mill is to be established at Gaffney City, in Spartanburg County, and a subscription of $40,000 has already been secured to its capital stock. The Pelzer cotton mill, at Pelzer, on the Columbia and Greenville Railroad, now in course of construction, has a capital of $500,000. The State has undertaken to develop the water-power of the Columbia Canal, located at the capital of the State, and New England capitalists have signified their intention of investing largely in different projected cotton mills at that place.

Not including the new mills in course of construction, the following statement will show the progress that has been made in cotton manufacturing in this State since 1860:

	1880.	1870.	1860.
Looms	1, 776	745	525
pindles	92, 788	34, 940	30, 890
Bales consumed	33, 099	10, 581	8, 840
Persons employed	2, 195	1, 123	891
Number of mills	20	12	17
Capital invested	$2, 593, 600	$1, 337, 000	$801, 825
Wages paid	$480, 808	$257, 680	$123, 300

PROFITS OF THE MILLS.

The profits of the South Carolina cotton mills for the twelve months ending February, 1880, ranged from 18 to 25 per cent. on the capital invested, and in one instance ran up as high as 40 per cent. The dividends paid to stockholders averaged from 10 to 15 per cent. Practical spinners, at the head of successful factories, regard 12 to 15 per cent. as a fair estimate of the annual profit that, with good management, can be relied on. In many respects the Southern spinners have marked advantages over the Northern spinners. They buy the raw material nearer first hands, and therefore at the lowest cost; the cotton is cleaner and there is less waste; the operatives live less expensively than in the North, and are satisfied therefore with less wages; the hours of labor are longer; and, lastly, a part of the products can be sold directly from the mill at a considerable saving in the cost of transportation. The net value of such advantages, with others not enumerated, is put at 10 per cent.

It is an outside estimate to say that Charleston's profit on the cotton received at that port last year amounted to $800,000. Taking $40 as the price of a bale of cotton, and assuming that each bale can be spun into $80 worth of yarns, it will be seen that the manufacture of 100,000 bales of cotton (less than one-sixth of the receipts at that port), in Charleston would yield a profit of $4,000,000, which amount would go out in wages to thousands of operatives or in dividends or interest on capital.

The cotton mills are located in the middle and upper counties of the State, which is accounted for by the fact that the necessary water power is there to be had in abundance and at a trifling cost. But as it has been demonstrated that water power is not indispensable for the successful working of a cotton mill, attention is being given to the construction of mills to be operated by steam power. Such being the case the probabilities are that a still greater number of mills will be built, thus enabling the producers to sell their crops right at the door of the factories at a large saving in the expenses heretofore incurred in placing their products on the market.

A most gratifying feature connected with the establishment of cotton mills in the South is that the great bulk of the capital employed in their operation has been furnished by Southern people. Southern capitalists are putting their shoulders to the wheel, diversified industries are taking the place of the exclusive cultivation of cotton, and Southern money and Southern muscle are moving in new directions. More than three-fourths of the capital invested in the cotton mills since the war has been subscribed by the people of the State, and new enterprises are opening up the way to a grand and successful future. The investment of Southern capital is encouraging Northern capital to come into the same field, and the rate of progress is far more rapid than if it depended on either Southern savings or Northern capital alone.

As another inducement to the larger investment of capital in the manufacturing industries, the legislature of the State has passed a law exempting all capital embarked in manufacturing enterprises in South Carolina from taxation for a period of ten years.

It will not be out of place just here to state that the same care is required in picking, moting, and preparing the upland cotton crop for market as in the preparation of the Sea Island staple for the use of fine spinners. Upland cotton is the greatest and most useful crop, and it is used almost entirely in the cotton mills of the up country. It is ginned on the saw-gin, but as the saws rip the fiber, consequently decreasing its strength and depreciating its value, it is claimed that, except in the quantity of work that the saw-gin will do, the roller-gin is better adapted to the working of the fiber, and the preparation of the staple for market. It is still an open question whether or not the inventors of roller-gins have brought the capacity of their inventions up so nearly to that of the saw-gins that planters can use them without decreasing their profits; whether a single roller-gin, operating against a saw-gin, will do an equal amount of work with less motive power and less labor. The matter was put to a partial test at the meeting of the Cotton Growers' Association, which was held in Atlanta, Ga., during the recent International Cotton Exposition. With the satisfactory settlement of this question, the beginning of the science in the treatment of cotton from the field to the factory will be instituted.

Another trial of every kind of gin, cleaner, press, and picker is proposed to be made in the building of the New England Mechanics' Institute in Boston, in December, 1882. Every man in the South who is especially interested in cotton production and manufacture will be invited to plant a specific for use at this trial, which will be a second step in the settlement of the problem. The picking and saving of the cotton wasted on the ground, the cleaning, ginning, and packing of the staple in good condition, offers to the Southern States a branch of cotton manufacturing the most important in the whole series of operations, which neither the Northern States nor Europe can share, but in which there is greater opportunity for profit in ratio to the capital invested, than in any other department of manufacture.

Mr. Edward Atkinson, who has made so careful a study of the cotton problem in all its bearings upon the industrial interests of the country, says that "no staple in the world, except the sugar raised by the Malays, is treated so barbarously as the cotton produced in the Southern States of the American Union."

THE COMPRESSION OF COTTON.

As before remarked, one of the great questions to be determined is whether the compression of the cotton after it has been ginned injures the fiber. It has been assumed, theoretically, that if cotton were spun without being baled it would give a better product. Northern manufacturers are divided in opinion as to whether the country bale is better than the bale subjected to the tremendous power of the steam compress. In England some cognizance was taken of the matter in the trial of East India cottons, at which it did not appear that compression did any harm. Mr. Dumont, an experienced manufacturer, who operates the Lowell and Woodlawn Mills at Lowell, Gaston County, North Carolina, recently made a test of the matter with similar results. He took a lot of cotton that had never been baled, another lot that had been baled by a country press, and a third lot that had been subjected to the hardest pressure the Charlotte steam compress could give it. Each lot was spun separately into yarn, and to Mr. Dumont's astonishment he found less waste and a larger product from the compressed cotton than from either of the other lots. The product of the country bale was, in turn, better than that from the cotton taken from the field. The yarn made from the unpressed cotton was, perhaps, a fraction stronger than that from the pressed cotton, but the slight advantage it possessed in this respect was more than counterbalanced by the evenness of the thread from the pressed cotton, which, after all, is regarded as the surest indication of strength. The matter, however, is not settled by Mr. Dumont's experiment, and the final result will be anticipated with a great deal of anxious interest, as it may largely affect the future course of the cotton market.

The value of real estate has been increased in the up country by the establishment of the cotton mills; new methods of cultivating the cotton crop have been adopted, and the planters have been shown the importance of keeping pace with the progress of scientific discoveries in their relation to the treatment of the soil and the proper manipulation of the great Southern staple.

So intimately connected are the operations of the farm with the yield of the products and success of the factories, that this brief reference to the conditions of cotton manufacturing in South Carolina is not considered inappropriate in this review.

THE PHOSPHATE INDUSTRIES OF SOUTH CAROLINA.

The phosphate beds of South Carolina contain an almost inexhaustible mine of wealth. They occur over a wide range of territory, reaching from North Carolina to Florida, and extending in places as much as 60 miles inland. In the regions where these phosphates are found the face of the country is very flat, the level of the land generally not being more than 10 feet above high-water mark. The coast line of South Carolina is formed by islands and peninsulas, separated from each other and the main land by broad arms of the sea.

The main land is intersected by large rivers, which are filled with salt or brackish water, the tide rising and falling in them for many miles from their mouths. In the channels of these rivers and underlying the adjacent lands the phosphate deposits are found. They are of remote geological formation, but were not discovered until after the war. Their development has been very rapid, and the capital at present invested in mining and preparing the crude rock for market amounts to millions of dollars.

Public attention was first attracted to the presence of these deposits by a series of important discoveries made by Prof. Francis S. Holmes, of Charleston, in 1866, who showed by careful chemical analysis that the phosphate rock contains a most invaluable basis for the manufacture of commercial manures. Capitalists were not slow to appreciate the wonderful richness of the phosphate rock in phosphoric acid, lime, and the other most essential constituents of high-grade commercial fertilizers, and the business of mining, exporting, and manufacturing the crude rock has increased with surprising rapidity and the most gratifying results.

The phosphates are found at the bottom of rivers 20 to 30 feet in depth, and on land at an elevation slightly above mean high tide. The most prominent characteristic of the Carolina phosphate is its nodular form, the nodules being of egg or kidney shape, and varying in size from the fraction of an inch to several feet in diameter, and in weight from a ton downwards. The nodular strata vary in thickness, the average depth being about 8 inches. The nodules are rough and indented, often honey-combed by round or irregular holes and cavities, or they are smooth and compact. They vary in color from olive or bluish-black to a yellowish or grayish-white, the land rock being generally lighter than that found under water or marsh mud.

The rock of commerce occurs always above the marl, and is known as water or land rock, according as it is found in the one element or the other. The water rock is darker in color and harder than the land rock, and is frequently found in a layer or sheet of cemented or tightly-compacted nodules overlying the marl at the bottom of the rivers or creeks, where it either forms the bottom itself or is overlaid by a deposit of mud of greater or less depth. It has been seldom dredged for at a depth exceeding 20 feet.

The masses are wholly devoid of crystalline structure or cleavage, exhibiting occasionally, however, an imperfect lamination. Well-preserved casts of Eocene shells occur throughout the phosphate rock, and fossil fish bones and teeth are not unfrequently found imbedded in them. The specific gravity of the dry and clear rock varies from 2.2 to 2.5, the average being about 2.4. The hardness of the average rock varies from 3.5 to 4.

The land rock is found at a depth of from 2 to 10 feet below the general surface of the soil, in a loose layer varying from a few inches to 30 inches in depth, the average thickness of the layers being about 8 inches. It occurs in sand, mud, clay or peat, and is often intermingled with numerous remains of land and marine animals, among them being the remains of the mastodon, elephant, tapir, deer, and of our domestic animals, the horse, the cow, and the hog. The remains of these land animals are found intermingled with, but never imbedded in, the phosphate rocks, giving no evidence that there was any community of origin between them.

The remains of marine animals are very abundant in the phosphate rock, and the beautifully preserved specimens of shark's teeth from 2 to 4 inches in length have been found in what are called the "Santee marls," differing but very slightly from those of the sharks now living on the coast. Specimens of these teeth have also been found in artesian wells in the phosphate region at a depth of 700 feet from the surface of the ground.

As to the origin of the phosphate rocks, the identity of the fossil shells it contains with those of the underlying marl makes this much certain, that it consists of fragments broken from the irregular surface of the marl, and that its rounded and nodular form was imparted to it by the action of the waves and currents to which it was subsequently subjected. The important question of how a marl containing originally 60 per cent. of carbonate of lime and 2 to 4 per cent. of phosphate of lime has been changed into one containing 50 to 60 per cent. of phosphate of lime and 5 to 10 per cent. of carbonate of lime, remains for consideration. Two theories have been offered to account for this substitution of the phosphate for the carbonate of lime.

One theory assumes that the fragments of marl were charged with the sweepings from guano beds formed above them by the congregation there, at some indefinite time in the past, of vast flocks of birds. In this case, bones of the birds should be among the fossils preserved in these beds. No such remains having been found, but instead the remains of numerous animals, such as the mastodon and elephant above mentioned, it was thought that immense herds of these animals had collected at one time about the shallow salt lakes in which the nodules were left upon the recession of the sea—just as animals now do about the salt licks of Kentucky, and that the phosphoric acid derived from their excrements and remains wrought the change in the marl. To this it is objected that the spots where the most of these bones are found are not the richest in phosphates; and while it is by no means probable that the nodules were in all, or even in most instances, formed where they are at present found, it is difficult to suppose that agencies of such local and restricted character as salt licks can account for the conversion of so great a mass of material over an area so extensive as that presented by the phosphate formation.

The other explanation of the formation of these rocks is that certain mollusks possess the power of separating the phosphate of lime from sea water, and that through their instrumentality the marl, and especially the upper strata, became charged with a certain amount of phosphate of lime; that the proportion of the phosphate of lime thus obtained to the whole body of the superficial layers of the marl was afterwards increased, first, by the removal of a considerable amount of the carbonate of lime, rendered soluble by the percolation through it of rain-water containing carbonic acid derived from the decomposing vegetable matters in the soil overlaying the marl; second, by a well-known proneness of phosphoric acid, when diffusely distributed, to concentrate and to give rise to concretionary processes similar to those observed in the flint nodules and pebbles of the English chalk. This theory agrees with the diffused occurrence of phosphate of lime in the superficial layers of the marl, as well as with the fact that the upper layers of the deposits and the outside of the nodules are the richest in phosphate. It substitutes for a local cause a general one, commensurate at once with the wide area occupied by the phosphate rocks and by the phosphatic marls of the South Atlantic seaboard.

The masses of the rock are easily broken and readily ground to a fine powder of a light yellow or gray color. The structure of the rock is so porous that when previously hot-air dried it can absorb from 5 to 15 per cent. of water. On friction of its fresh surfaces it gives off a peculiar fetid oder.

As the result of many hundred analyses made by Dr. C. W. Shephard, jr., chemist to the State department of agriculture, and professor of chemistry in the Medical College of South Carolina, the following percentages of the important constituents of the phosphate rock are given: Phosphoric acid, 25 to 28 per cent., the equivalent of 55 to 61 per cent. of bone phosphate of lime; carbonic acid, 2½ to 5 per cent., the equivalent of 5 to 11 per cent. of carbonate of lime; sulphuric acid, ½ to 2 per cent.; lime, 35 to 42 per cent.; sand and silica, 4 to 12 per cent.; organic matter and water, 2 to 10 per cent., with traces of fluorine, iron, magnesia, alumina, and other elements. The organic matter is nitrogenous, containing occasionally as high as a quarter per cent. of nitrogen.

The extent of the deposits has not yet been definitely ascertained, and widely varying estimates as to the quantity of rock, running from 5,000,000 to 500,000,000 tons, have been made. Professor Shephard is of the opinion that "the total yield of all the known phosphatic deposits of South Carolina, of merchantable quality and accessible position, would not exceed 5,000,000 tons." He traced the deposit over 240,000 acres, and estimated that the accessible rock covered 10,000 acres. At an average yield of 800 tons to the acre this territory would give 8,000,000 tons of rock.

Taking the territory owned and operated by the Coosaw Mining Company, it would appear that he has underestimated the amount of rock. This company has the exclusive right to a territory of about 6,000 acres in Coosaw River, besides the adjacent marshes yet unexplored. Everywhere the river bottom is covered with rock, which for the most part forms a solid sheet, varying from 8 inches to 1½ feet in thickness. Taking the lesser thickness, we have, with a specific gravity of 2.5 after subtracting 25 per cent. for loss in washing and drying, something over 1,700 tons to the acre, which would give for the river territory alone belonging to this one company something more than 10,000,000 of tons.

The yield per acre of clean and dry rock varies from 300 to 1,200 tons. Deposits of less than 500 tons to the acre, under ordinary circumstances of occurrence and quality, do not prove remunerative. The yield stands in a certain ratio to the thickness of the stratum, and the average yield of land beds now worked is 700 to 800 tons to the acre. In the region between the Ashley and Stono Rivers the deposit occurs over immense tracts at a remarkably uniform depth. The Stono River bed has long been regarded as a most successful field for phosphate workers. The Edisto deposits occur both in that river and on its banks. The quality is fine, but the depth is irregular. The largest share of the total yield of Carolina phosphates has been procured from the body of rock extending from the head of Saint Helena Sound up Bull and Coosaw Rivers, and underlying Chisolm's Island. Heavy beds of phosphates, but of an inferior quality, occur about and below Beaufort.

The mining and preparation of the rock for market requires the investment of large capital and the expenditure of heavy labor. Parallel ditches 2 yards wide are sunk through the soft soil to a depth of 4 to 7 feet to the stratum of sand or mud, in which the loose layer of phosphate nodules is found. The rock is shoveled out, thrown into heaps, and transported by rail to the washes situated on the wharves whence it is shipped.

The land deposits are excavated with pick and shovel. In mining the rock negro labor is generally employed under the supervision of white men. Several experiments have been made with Italian laborers, but, although they worked well, the climate during the summer months along the rivers is such that their labor could not be utilized during the whole year. A common laborer will raise a ton a day, for which he is paid $1.75. The product of the land rock is about 100,000 tons a year.

The rock is cleaned by first washing it in an inclined perforated iron cylinder. It is then placed in long "washers" made of wood or iron, in which is a shaft, armed with projecting steel teeth, set at such an angle with the shaft as to form a spiral screw, which moves the nodules up the inclined bed of the "washer" against a heavy stream of water, which enters at the upper end of the washer-box and empties itself through an overflow at that end. The abrasion of one piece of rock with another, as they pass through the washer, effectually cleanses it of all foreign matter. The rock is also sometimes cleansed in a cylindrical washer, the cylinder being furnished with spiral flanges of iron, which keep the rock rolling and ascending an inclined tube, a powerful stream of water being distributed through the rock by means of a perforated pipe running through the cylinder. From the upper end of the washer the clean rock falls out upon an iron grating. It is then taken to the drying shed and stored for manufacture into fertilizers or for shipment. The capacity of a washing-machine is 50 tons or more per diem of ten hours.

The phosphate deposits in the river beds, or forming the floor of the shallow arms of the sea along the coast, are mined with crowbar and pick, tongs and dredges, according to their depth below the surface of the water.

The river miners work under charters from the State, which grant them a general right to work a specified territory with any other comers, or exclusive right to such territory. In either case they pay a royalty to the State of $1 for every ton of rock raised. The river works yield about 100,000 tons of rock per annum; being harder and therefore more difficult to grind, it has been mostly shipped to foreign or northern ports to be manufactured. Laborers receive good wages at this work. Divers raising the rock from a depth of 10 or 12 feet are paid by the amount raised. Those working one and a half hours on the ebb and one and a half on the flood tide earn as much as $18 a week. It is thought that large quantities of rock underlie the salt marshes between the high and low water mark.

A large part of the Carolina phosphate is raised from the bottom of the rivers by steam dredging boats, which are operated most successfully in about 12 feet of water, although they have frequently been employed in twice that depth. These dredges have tremendous power, and can raise about 100 tons of rock a day. The "dipper" of the dredging-machine empties its load of rock, marl, mud, and sand on a grating, or into a preliminary conical "washer," where it is subjected to a heavy stream of water which carries off the greater part of the mud and sand, thereby enabling the operatives to detect any pieces of marl, sandstone, or oyster shells that may be mixed with the rock. These are picked out and cast aside. The partially cleaned rock then falls, or is cast by the machinery, into a "crusher," and thence into the second "washer," where the fragments are thoroughly cleansed from remaining impurities. The washing apparatus employed in the preparation of the river rock is either upright and caldron-shaped, or similar to the "shaft" washers previously described. They discharge the washed rock upon lighters for transportation to the drying-shed, where it is heaped upon and around a system of perforated iron pipes, which conduct hot air (driven from an oven by a fan) through every part. A few days' continuous drying is sufficient to expel all the moisture from the originally saturated rock.

The price and profit of Carolina phosphate vary according to the conditions of supply and demand. Of late years the price has varied from $5 to $8, averaging about $6 a ton. As a rule it has cost less to mine the river beds than the land deposits. The conditions of labor and the inexperience of those engaging in mining operations prevented many from realizing any profit upon their labors, but as the business becomes more settled, the transportation rates and facilities fixed on a reasonable schedule, and the value of the phosphates more widely known, the chances for large returns are becoming better. The mining companies find no difficulty in promptly placing their products, and some of the largest are under contract for all they can mine so far ahead as April and May, 1882.

The capital invested in manufacturing and mining the phosphate is from $8,000,000 to $10,000,000, and between 5,000 and 6,000 persons are employed in the business. There are eleven companies engaged in mining the land rock, and five large companies, besides a number of individuals and firms that are operating the marine deposits. The royalty of $1 per ton paid to the State on the river phosphates amounted during the commercial year ending September 1, 1881, to $124,541.14, of which amount the Coosaw Company paid $99,135.50. The total royalty received by the State during the fiscal year ending August 31, 1880, amounted to $65,001.95. Of the royalty received during the last fiscal year the companies working under exclusive-rights charters paid $116,600.50, and those operating under the general-rights bill paid $7,940.64. Of the rock thus mined there were shipped to foreign ports 71,316 tons; domestic ports, 53,225$\frac{14}{2240}$ tons; total shipped, 124,541$\frac{14}{2240}$ tons.

As suggested by Mr. E. L. Roche, the State inspector of phosphates, this statement shows, as a mere matter of business, aside from any popular question, how much more it is to the advantage of the State to encourage the large investment of capital in this industry, and it proves the wisdom of the legislature in founding and fostering such companies.

There is still a very large territory owned by the State outside of that granted to exclusive-rights companies. The deposit in this territory is rich and available. It is now being very imperfectly worked, if, indeed, it is being worked at all. It is manifestly for the true interests of the State that this territory should be fully developed. But without the use of capital—and considerable capital—no very large development of any locality can be looked for. It is useless to expect that capitalists will be found ready to advance their money unless they are secured in the undisturbed possession, for a sufficient period, of territory enough to warrant the purchase of the necessary plant, and yet in this manner only will this large deposit be fully and properly developed. By granting to companies or individuals sufficient territory for a sufficient period to justify the outlay of money, the State would derive the benefit arising from the increased production. The phosphate deposits would be properly and carefully worked, instead of being merely gleaned over where they are richest, or happened to be most accessible.

The total royalty received by the State on the production of the river beds amounted, on August 17, 1881, to $699,193.61. The total production of phosphate rock, land and marine, up to September 1, 1881, amounted to about two million tons, or, at $6 a ton, amounted in value to $12,000,000.

Starting from the year 1867, when the first shipments of crude rock were made, the following table will show the progress and increase in the business up to May 31, 1881:

Date.	Shipments to foreign ports.	Shipment to domestic ports.	Total.	Value.
	Tons.	*Tons.*	*Tons.*	
1867	....	6	6	....
1868	208	11, 654	11, 862	....
1869	3, 760	24, 511	28, 271	....
1870	13, 652	40, 099	53, 751	....
1871	42, 923	21, 869	64, 792	....
1872 to July 1	29, 682	17, 941	47, 623	....
Totals	90, 225	116, 080	206, 805	$1, 450, 000
Consumed by local companies			36, 110	250, 000
Totals			242, 415	1, 700, 000

Starting again at 1875, and bringing the figures down to the present year, the increase in the business for the years ending May 31 is no less startling:

	Total tons shipped
1875	122,790
1876	132,626
1877	163,220
1878	210,323
1881	266,734

THE TRADE IN FERTILIZERS.

The trade in Charleston in commercial fertilizers has increased to a most surprising extent, and there are now located in or near the city thirteen factories for making commercial fertilizers. Two other large companies have been organized and will operate near Beaufort.

The shipments of manipulated phosphates by the railroads and steamship lines, beginning with 1866, increased with almost as much rapidity as the shipment of crude rock. The number of tons shipped was as follows:

1866	7,884	1874	46,382
1867	12,122	1875	50,837
1868	14,863	1876	46,443
1869	29,779	1877	45,766
1870	46,265	1878	52,000
1871	22,589	1879	60,000
1872	37,759	1880	80,000
1873	56,298	1881	100,000

About nine-tenths of the amounts given in the latter years represent the Charleston manufactures.

The advantages possessed by Carolina phosphates are their accessibility to market, three of the finest ports on the South Atlantic coast—Charleston, Port Royal, and Savannah—being within easy reach of the phosphate beds; the proximity of the deposits to the field of greatest consumption on this continent, the Southeastern States annually consuming about 250,000 tons of commercial fertilizers; the cheapness and purity of the rock, and its easy conversion into a superior superphosphate; and its physical and chemical composition, which favor the more rapid and effectual assimilation of its constituent elements by plants than occurs in the case of most other mineral phosphates.

In order the better to protect the interests of the planters and to guarantee the quality of all commercial fertilizers manufactured and offered for sale in the State, the State department of agriculture has been charged by special legislative enactment with their inspection, and it is required that every bag, barrel, or other package of such fertilizers or commercial manures offered for sale or delivered after sale in this State shall have thereon a plainly printed label or stamp, which shall truly set forth the name, location, and trade-mark of the manufacturer, also the chemical composition of the contents of such package, and the real percentage of any of the following ingredients asserted to be present, to wit: Soluble and precipitated phosphoric acid, soluble potassa, ammonia, or its equivalent in nitrogen, together with the date of its analysis. Any such fertilizer as shall be ascertained by analysis not to contain the ingredients and percentage provided in the act is liable to seizure, condemnation, and sale.

AGRICULTURE IN GEORGIA.

Georgia, like the rest of the South, suffered in her material prosperity by the fortunes of war, and the restoration has been slow, but no State has worked more patiently to solve the untold difficulties of the situation. The past year was exceedingly dry, perhaps the dryest, taking the State generally, that has ever been known. In a few favored localities good crops were made, but the production of the leading staples was much less than that of the preceding year. It is probable, however, that the proper diversification and rotation of crops, the manner and material of fertilizing, the use of new varieties of seed, and the adoption of improved methods of cultivation would, in a measure, at least, make the farmer master of the seasons and prevent an extensive failure of the crops, even in exceptionally dry years.

The State is nominally divided into Lower, Middle, and Upper Georgia, corresponding with the three great natural divisions, the low country, the hill country, and the mountain region. The average elevation of the surface of the State is six hundred and fifty feet above the level of the sea, and the three divisions of the State differ in soil and climate and, to some extent, in productions. The natural fertility of the soils of the State is very great, but under the hurtful system of agriculture which was practiced before the war, speaking generally, it has been greatly impaired.

UPPER GEORGIA.

In Upper Georgia the soil is a mixture of clay and sand, and with the soil of the western part of this section, there is a large admixture of lime. The lands are generally rich and productive, the yield depending wholly on the skill used in their cultivation. The staple field-products are Indian corn, wheat, oats, rye, barley, clover, the various grasses, and sorghum cane, while in the southern portion of this division cotton is grown to a considerable extent.

The average yield per acre, under fair cultivation, is: corn, 20 bushels; wheat, 15 bushels; oats, 25 bushels; rye, 8 bushels; barley, 25 bushels; hay, from 2 to 3 tons; sorghum sirup, 75 gallons; cotton, 400 pounds, in the seed. Under high culture, two, three, and sometimes four times this production is realized. Tobacco, buckwheat, and German millet can also be grown with great success.

MIDDLE GEORGIA.

The surface of Middle Georgia is rolling, and the soil generally red and very strong and productive. This is the most populous section of the State. The low lands are of the best quality, and the uplands are very fertile. The staple field-products are cotton, corn, oats, and wheat, while all the grains and grasses, and even tobacco, may be grown successfully. The average yields, with ordinary culture, are: cotton, 550 pounds, in seed, per acre; corn, 12 bushels; wheat, 8 bushels; oats, 25 bushels; barley, 30 bushels; rye, 8 bushels; sweet potatoes, 100 bushels; field pease with corn, 5 bushels. In what is known as "East Georgia," embracing the country lying between the heads of tide-water in the east and the Ocmulgee River on the west, and the coast country on the south, the average yields per acre, with fair culture, are: cotton, 650 pounds; corn, 14 bushels; wheat, 12 bushels; oats, 25 bushels; cane sirup, 300 gallons; potatoes, 150 bushels; barley, 30 bushels.

SOUTHERN OR LOWER DIVISION.

The southern or lower division of the State is chiefly made up of sandy pine land, with occasional belts of oak and hickory, and where these occur the soil is very fertile. The lands in this section generally are light and easy of cultivation, and while some portions, especially those on the water-courses of the southwest and the red lands, are very rich, nearly the whole is tillable, and, with occasional light manuring, continues to produce good crops from year to year. It is, as a general rule, sparsely settled and the lands are the cheapest in the State. This division of the State embraces what are known as "Southeast" and "Southwest Georgia." Under the first of these subdivisions is embraced the coast and tide-water sections of the State. It has three distinct soils: 1. Light, sandy, and poor; 2. Dark, sandy loam, containing a large amount of vegetable matter; 3. Reddish and clayey. The average yield per acre of staple crops, with fair cultivation: sea-island cotton, 600 pounds, in seed; corn, 15 bushels; oats, 25 bushels; rice, 40 bushels; cane sirup, 300 gallons; potatoes, 200 bushels. On the best lands, 1,500 pounds seed cotton, 60 bushels rice, 600 gallons sirup, 50 bushels corn, 40 bushels oats, and 400 bushels potatoes are often produced on one acre.

The second subdivision of this section of the State ("Southwest Georgia") has a great proportion of clay lands and oak and hickory forest growth, although much the larger part of it is a light sandy soil and was originally covered with yellow or long-leaf pine. The clay lands are generally very rich, and their fertility lasting; the pine lands produce freely, are easily worked, but are less durable, though, with reasonable fertilization, will last for many years. The district contains very little waste land, or lands too poor or too swampy for cultivation, while the alluvial lands of the Chattahoochee and Flint Rivers, and of many of the creeks, have made this section famous as the best cotton region of the State. The depth of the subsoil beneath the surface on clay lands is 6 to 10 inches; on sandy lands, from 12 inches to 3 feet. The average yields per acre, with good cultivation, are: cotton, 500 pounds, in seed; corn, 10 bushels; oats, 15 bushels; sirup, 200 gallons; sweet potatoes, 150 bushels; ground pease, 50 bushels. On best lands, without manure, 1,500 to 2,000 pounds cotton, in seed, 50 to 75 bushels corn, 50 to 65 bushels oats, 400 gallons of sirup, and 400 bushels sweet potatoes, are often produced.

Speaking generally, the interior may be regarded as the favored cotton-growing section and as the granary of the State. The lower part, or coast counties, is peculiarly suited to the cultivation of rice, Sea Island cotton, and ground pease, but is not so well adapted to raising corn. The oat crop, however, grows to great perfection in this section, frequently yielding seventy-five bushels to the acre, and sometimes as much as one hundred bushels. On ordinary land and with favorable seasons and moderate fertilizing the average yield is from 25 to 30 bushels. The rust-proof varieties are best adapted to the soil. Wheat can be grown successfully in all parts of the State except on the sea-board. In general, with favorable conditions, the average per acre is from eight to ten bushels. When affected by protracted drought and rust, of course the average will not run so high.

There has been considerable improvement in Georgia in agricultural methods since the war, and there is a general disposition among the farmers to use labor-saving implements and to adopt all well-approved agricultural processes. The old thrashing machines have been abolished, and now the golden grain is beaten out by steam power, the traveling thrasher having taken the place of the antiquated boxes with which the country gin-houses were formerly furnished. There has also been a great advance in the plowing of the land, the clumsy old plows having been almost wholly supplanted by modern improvements constructed upon scientific principles and capable of doing a great deal more work in a vastly superior manner.

A great desideratum in Southern farming operations is the discovery of some machine to cheapen the harvesting of cotton.

The acreage now under cultivation in Georgia is much greater than it was prior to the war, and the yield in cotton, which is the leading crop, is fully 300,000 bales in excess of the product before the war. This fact will indicate, to some extent, the improvements that have been introduced in the agriculture of the State, although due allowance should be made, so far as the increase of cotton is concerned, for the large use of commercial fertilizers. The cotton production of Georgia before the war amounted to about 500,000 bales, and the crop last year was above 800,000 bales.

Georgia stands at the head of the list of guano-using States, though the disposition of the best planters is to use less commercial fertilizers and to compost more heavily. During the past year, of the whole area planted in cotton, 82 per cent. was manured with either commercial fertilizers, home manures, or compost.

The planters of the State expended about $6,000,000 for fertilizers, at least one-half of which amount might have been kept at home by judicious management and the proper attention to the preparation of home-made manures. The use of commercial fertilizers is advocated by the best farmers of the State, but the extravagant and indiscriminate use of high-grade manures decreases the profits and must prove disastrous to the cotton planters.

During the past year about 7 per cent. more fertilizers were used than during the preceding year, and of the whole quantity purchased, only about 7 per cent. was bought for cash. The cash price paid per ton for ammoniated superphosphates was $40, and for non-ammoniated superphospates, $33 per ton. The fertilizers bought "on time" were procured on the "cotton option plan," the average price per ton in lint cotton, payable in the fall, being 464 pounds for ammoniated superphosphates and 410 pounds of lint cotton for non-ammoniated superphosphates. On the basis of fifteen cents per pound for the lint cotton, at which figures the estimates are usually made, under this plan the price per ton for ammoniated superphosphates was $69.60, and for non-ammoniated superphosphates, $61.50 per ton.

These prices varied considerably in the different counties and sections of the South. In North Georgia, the average cotton option price of ammoniated superphosphates was 455 pounds lint cotton; in Middle Georgia, 465 pounds; in Southwest Georgia, 481 pounds; in East Georgia, 442 pounds; and in Southeast Georgia, 490 pounds. For non-ammoniated superphosphates, in North Georgia, 381 pounds; in Middle Georgia, 410 pounds; in Southwest Georgia, 396 pounds; and in Southeast Georgia, 477 pounds lint cotton.

In order to protect the planters of the State from imposition in the sale of fertilizers, an act was passed by the legislature in 1874 providing for the inspection of all fertilizers sold within the State. The penalties for the infraction of the requirements of this law are severe, and the abuses from which the farmers, previous to that time, suffered are largely prevented. Notwithstanding the large increase in the yield of cotton, facilities for transportation, and the enlarged demand of Southern consumers, the farmers, as a rule, are not so flourishing as they were before the war. A few individuals who have systematically diversified their crops and raised their home supplies are doing well, but, in the main, agriculture in Georgia is not as prosperous as it should be. This results from various causes. The cost of production is greatly in excess of what it should be to allow the planter a margin of profit. It is estimated that it takes about nine cents a pound to grow cotton. Before the war this was considered a fine price for the staple.

In the cultivation of cotton, on account of the financial embarrassments of the planters, the farmers of the State being generally in debt, there is very little profit to the producer. He is dependent in large measure upon the mercy of the speculator who furnishes the supplies to make the crop, and then depresses the market when the staple has been gathered and is ready to be sold. The farmer is forced to sell at a low price to meet his engagements, his cotton being the only crop that will command ready money, and the profits which would go into the planter's pocket, under a more favorable condition of things, inures only to the speculator. On account of these untoward circumstances, the percentage of loss to the planter is usually very heavy.

The most serious drawback to the agricultural prosperity of the State is the system of securing advances of farm and plantation supplies by mortgaging the growing crops. In this way the entire profits of the planters are eaten up. The Hon. J. F. Henderson, State commissioner of agriculture, fairly states the matter as follows:

> Corn sells at the average price of 89 cents per bushel cash and $1.12 "on time." This is simply a ruinous policy; no legitimate business can pay such rates of interest and prosper. Farmers cannot afford to buy corn at 89 cents cash a bushel, and yet they are paying "on time" 54 per cent. per annum on the cash price. Offer to lend a man money at 54 per cent. per annum, or 4½ per cent. per month, and he would feel that his intelligence was insulted, and yet he buys corn, agrees to pay 54 per cent. per annum on the cash price, and mortgages his property to secure the payment of principal and interest. Similar rates are paid on bacon and hay, which could and should be produced on the farm. The cities were formerly fed by the country; now the country is fed from the cities. This is an unnatural, abnormal condition of thing that must be reversed, or it will bring disaster upon both country and city.

Before the war the farmers of the State raised all their own farm supplies, but now a very large part of the provisions necessary to carry on agricultural operations is supplied by the Northwestern States, at prices greatly in excess of what they could be produced at home. The most prosperous farmers in the State are those who raise all their own supplies, and so are independent of the world. It is an encouraging indication of the future agricultural development of the State that the farmers are waking up to the importance of diversifying the crops, although they have not yet accomplished much in this direction; a practice that would certainly result in the most desirable consequences. Before the war the purchase of provisions on farms was unknown; now the exceptional instances are on the other hand.

The supply of labor in the State during the past year was somewhat smaller than during the preceding year, although the wages ranged about 11 per cent. higher. Twenty-seven per cent. of the farm labor of the State was hired for wages; 38 per cent. on shares, the laborer receiving, in lieu of wages, a stipulated portion of the crop; and 32 per cent. rent land, paying the rent generally in cotton, but often in stipulated portions of the various crops cultivated. The average annual wages paid full hands, with board, was $117. An average of 46 per cent. of the crop was given the laborer on the share system. The comparative results of the wages and share system, measured by the number of bales of cotton produced per mile, is in favor of the wages plan, and it can hardly be doubted that a much larger proportionate product of corn, meat, &c., is the result of this plan. Still, it is said, in explanation of these disproportionate results, that they are largely due to the fact that the better lands. larger proportionate areas, and more fertilizers are devoted to the provision crops under the wages system. This explanation, however, while just, only adds force to the arguments in favor of hiring for wages, illustrating, as it does, a want of confidence in the other plan.

There is another especially discouraging feature about the agricultural growth of Georgia—a disposition on the part of the young men to quit the farm. In some sections they have taken the lead in agriculture, but generally speaking they do not exhibit any fondness for the calling. If the people would free themselves from debt and begin the diversified cultivation of the soil, there is little doubt that a higher state of agricultural prosperity would result than has existed at any period in the history of the State. How this beatitude is to be reached it is hard to tell. Perhaps the surest way to solve the difficulty would be for the farmers to give up enough of their property to pay their debts and start once more at the beginning.

The number of small farms has largely increased in Georgia since the war. The ownership of land, which was formerly held in large tracts, stands very much as formerly, but a system of tenantry farming has generally been adopted throughout the State. There has been, however, a vast increase in the number of independent holdings.

From 1868 to 1873 the number of small farms into which the large plantations were divided was 32,824. In Liberty County there were in 1866 only three farms of less than 10 acres. The number had increased in 1870 to 616, and, in addition, there were 749 farms of between 10 and 20 acres. In 1850 the total number of farms in the State was 51,759; in 1860, 62,003; in 1870, 69,956; and in 1880, 138,626.

During the decade between 1850 and 1860 the increase of small farms in Georgia was 19.8, and during the decade between 1870 and 1880, 98.1 per cent. The rate of increase in the number of farms was nearly five times as great in this State between 1870 and 1880 as it was between 1850 and 1860.

In 1880 the number of farms in the State occupied by owners was 76,451; the rental, 18,557; and the number rented for shares of the produce, 43,618.

The gross number of farms by classes, according to acreage, was: Under 10 acres, 3,211; 10 acres and under 20, 8,694; 20 acres and under 50, 36,524; 50 acres and under 100, 26,054; 100 acres and under 500, 53,635; 500 acres and over, 10,508.

The distribution by classes, according to acreage, of farms occupied by their owners was as follows: Under 10 acres, 941; 10 acres and under 20, 1,353; 20 acres and under 50, 6,605; 50 acres and under 100, 14,401; 100 acres and under 500, 43,505; 500 acres and over, 9,646.

The distribution by classes, according to acreage, of farms occupied by persons paying rent at a fixed value in money was as follows: Under 10 acres, 1,005; 10 acres and under 20, 1,631; 20 acres and under 50, 8,205; 50 acres and under 100, 3,616; 100 acres and under 500, 3,680; 500 acres and over, 420.

The distribution by classes, according to acreage, of farms occupied by persons paying rent in shares of the produce was as follows: Under 10 acres, 1,265; 10 acres and under 20, 5,710; 20 acres and under 50, 21,714; 50 acres and under 100, 8,037; 100 acres and under 500, 6,450; 500 acres and over, 442.

These figures show a most remarkable revolution in the agricultural development of Georgia.

Small farms are a result of the war. Before the abolition of slavery the planting system was conducted on a much more extensive scale, and the land was generally divided into large estates, which were held by comparatively few of the total population.

The terms on which lands are rented vary with the circumstances of the renter and the extent to which the land-owner must assist him, besides furnishing the land. If the land-owner furnishes only the land, he receives for its use one-third of all that is made from it, or a stipulated number of pounds of lint cotton in lieu of the third of other crops. If he furnish not only the land, but all or a portion of the stock, implements, &c., he receives a larger part of the crop than one-third, in proportion to his additional expense.

Taken as a whole, the tenantry system in Georgia is not altogether a success. As a general thing the tenants operate on advances, which are secured by waivers as to homestead or by mortgage of growing crops or personalty. They often cultivate poor lands, do not fertilize sufficiently, and fail to exercise proper economy in living. If the lands were highly cultivated, if less cotton were planted, and diversified husbandry prosecuted, a very large percentage of tenants would soon escape from the thralldom of debt and become prosperous and independent. There are a few instances where tenants have succeeded admirably, in spite of low prices of cotton, in accumulating means to become real-estate owners. These cases, it is true, are exceptional, but they illustrate the possibility of others, by like providence and industry, reaching the same golden results.

The condition of the negroes in Georgia is in some respects very encouraging. Wherever they have displayed judgment and economy in the management of their affairs they have prospered far beyond the best expectations of their friends. In many instances they have acquired considerable property, and now own about three million dollars' worth of real estate. Generally speaking, however, their earnings are small and their means very limited. They have not learned the philosophy of saving, and, as a people, are extravagant and wasteful in their habits. If they had brought to bear the same energy and industry that characterized them under the former condition of things, with economy of living, nothing on earth could have prevented them from owning the real estate of the South.

By many the negro is regarded as among the best laborers in the world. So far as the South is concerned he is the only laborer that has ever succeeded in the cultivation of cotton, the chief staple product of that section. Judge Henderson, the commissioner of the State agricultural department of Georgia, who has given the subject considerable attention, is of the opinion that "as laborers the negroes depreciate annually, so that their labor is not remunerative when they are acting as hirelings." Continuing, he says:

> They [the negroes] are farming largely in the State on their own account, as owners or tenants. As compared with white tenants, they are not so good, not equal in judgment and experience, such as would grow out of the general management and direction of their own business. The younger generation have imbibed all the errors of the older negroes, and lack much of their industry. In proportion as they are all educated they manifest a disposition to shirk the more arduous labors of the field and hunt lighter employment about the cities and villages. As a general rule, if the negro did not have the presence of the white man to animate and guide him he would soon sink into habits of sloth and greater improvidence.

MARKET-GARDENING IN THE STATE.

Since the war a very handsome business has been built up in raising vegetables for market, and, including the truck-farms of Charleston Neck and the adjacent islands, the revenue from this source amounts to several hundred thousand dollars annually. As the population of the State increases, the railroads furnishing cheap and speedy communication with outside markets, this branch of business will assume greater proportions, and the farmers will have a better opportunity for diversifying their operations with profits. In proof of this conclusion, Aiken County may be cited as a single instance of what an interior county can do in market-gardening, the total value of the vegetable products sold in that county in 1880 amounting to $15,892.

The truck trade of Charleston, which is the growth of the last twelve or fifteen years, has become a very important factor in the trade of that city. The peculiar facilities which are offered for shipping early fruit and vegetables to the New York market, and the fancy prices that have been obtained for the earlier shipments, have contributed largely to the development of the business, and much land adjacent to the city is devoted to the raising of strawberries and vegetables. The season of 1880 was one of unprecedented success and of large remuneration to the farmers. It was marked by the largest and earliest production of strawberries and vegetables ever known in that locality. The first shipment of strawberries was made in January, and the total crop aggregated over 1,000,000 quarts, of which 823,544 quarts were shipped to

New York. The season of 1881, however, was as disastrous as the previous one had been prosperous. As will be seen by the statistics given below, scarcely half a crop was made, and even that brought no better prices than the full crop of the previous year. Of course, the unprecedently hard winter of 1880–'81 had more or less to do with the failure. Planting was necessarily late, and in the case of the strawberries and earlier vegetables an April frost produced most damaging effects. Following the April frost there was a long-continued drought, which cut off the crop of the later vegetables and nearly destroyed those which had suffered from the frost.

The following table gives an estimate of the strawberry and vegetable crop of Charleston for 1881 as compared with the crops of the two previous years:

Articles produced.	1879.	1880.	1881.
Potatoes .... barrels..	28, 659	42, 000	30, 000
Tomatoes .... crates..	5, 000	5, 000	3, 000
Cucumbers .... do ...	6, 500	4, 700	3, 500
Pease .... do ..	17, 000	18, 000	10, 000
Beans .... do...	2, 500	2, 500	2, 000
Squashes .... do...	500	600	500
Lettuce .... do....	300	400	200
Miscellaneous	10, 000	20, 000	20, 000
Strawberries .... quarts..	734, 003	1, 000, 000	500, 000

The following table shows the shipments of fruits and vegetables compared with those of the two preceding years:

Articles shipped.	1879.	1880.	1881.
Strawberries .... quarts..	534, 070	828, 544	442, 378
Potatoes .... barrels..	23, 659	33, 230	21, 880
Melons	20, 602	18, 006	16, 304
Vegetables .... packages..	38, 530	90, 514	47, 115

The shipments during the season of 1881 were made as follows:

Articles shipped.	Steamer.	Express.	Railroad.	Total.
Strawberries .... quarts..	124, 400	149, 024	168, 954	442, 378
Potatoes .... barrels..	16, 875	....	5, 005	21, 880
Vegetables .... packages..	33, 491	1, 286	12, 338	47, 115
Melons	12, 383	921	3, 000	16, 304

The origin and growth of market gardening in this section, as already stated, sprang up almost immediately after the close of the war, and each year has increased the acreage under cultivation, and now from Line street, Charleston, up the two main roads leading from the city for a distance of fully 5 miles, almost every acre of land between the Ashley and Cooper Rivers has been converted from cotton and provision plantations into well-manured and highly cultivated truck farms. The business is not confined to Charleston Neck, but in Christ Church Parish, on James Island, in Saint Andrew's Parish, on John's Island, and on Wadmalaw and Edisto Islands similar farms are under cultivation, and, as experience has demonstrated, the profit to the farmers is as great as, if not greater than, that which could possibly be derived from cotton raising.

Strawberries are considered the safest and most profitable crop, and although a late frost will kill the blossoms and destroy the young fruit, the plant will remain unhurt, soon bud out again and produce a yield which is not perceptibly diminished. The cost of cultivating strawberries is estimated at about $150 an acre, and they require constant care and attention. The process of mulching has come into general use, and is now considered an indispensable factor in the successful production of the fruit. The object of this process, which is the covering of the fields with pine straw and arranging it around the plants, is threefold: It keeps the land moist, protects the fruit from being injured by heavy rains, keeps it clear and free from contact with the dirt, and prevents the growth of weeds. The collection of the pine straw for this process has been made a regular business, and it is gathered mostly in the vicinity of Summerville, packed into bales and sent to the city at a cost of $1 per bale. Thirty bales of straw per acre are required to properly mulch the fruit. The average yield per acre is estimated at 3,000 quarts, although the yield under favorable circumstances has reached as high as 6,000 quarts to the acre.

In the harvest time, which lasts about six weeks, ten hands are employed per acre, who are paid sometimes by the quart and sometimes by the day. This expense, added to the others, greatly reduces the profits of the farmer, which, after freight, commissions, &c., have been deducted rarely exceeds an average of 10 cents a quart. The early crop is, of course, the most profitable, the berries frequently bringing as high as $2 per quart in Northern cities for several days after they are first put on the market. The packing of the fruit for shipment requires great skill and care, and the cost of picking and packing averages about $1 per crate of 32 quarts. The strawberry raiser in this section, when the season is favorable, has about six weeks' harvest ahead of any other section north of Charleston, and consequently his chief profits are made in that time.

The cost of placing the fruit in Northern markets has been reduced, owing to the reductions in freight and increased facilities offered by both the railroads and steamships. The cost of labor remains about the same from year to year, and the cost of picking, transporting, and selling the fruit may be stated as follows, which is exclusive of the cost of cultivation: Picking and sorting, 3 cents per quart; freight and refrigerators, 10 cents per quart; commissions on gross sales, 10 cents per quart.

In addition to the refrigerators provided by the steamers, the farmers are using more generally a small portable refrigerator of home manufacture. These hold 72 quarts of berries, and it is estimated that by the use of them the berries can be placed in Northern markets at a cost of 6 cents per quart.

The cultivation of green pease is by no means so largely engaged in as those already mentioned. The greater portion of the pea crop is raised in Christ Church Parish, and 200 acres will probably cover the amount of land employed in this way. Its culture is, however, no small item, and nets the farmer a handsome profit. The cost of raising the article is not so large, and a very small percentage is lost in shipment compared with other articles which are more perishable. The varieties most generally planted are the "Marrowfat" and "Carter's Extra Early."

The cultivation of tomatoes is far more risky than that of any other garden product, and is growing more unpopular with the farmers every year. Frequent losses have made them careful. The plant requires not only constant care and attention, but a large outlay in the beginning in the purchase of hot beds, sashes, &c. The seed is first placed in hot beds, so called, because fresh manure is used which emits in decomposition considerable heat, which forces the growth. When the young plants have reached a certain stage they are taken from the hot beds and transplanted singly into what are called cold sash beds. They are given abundant room and are gradually hardened to the cold by raising the sashes a little every day. When the plants become strong, they are then taken up again and transplanted into the fields, where they are allowed to fruit. Great skill and care is likewise required in gathering and packing the crop for shipment. The greatest danger in the cultivation of this vegetable is a late frost in April or May.

In addition to these drawbacks the farmers have found that one great reason why tomatoes do not bring a fancy price in the Northern markets is because of the great perfection which has been attained in canning the article.

The cucumber, although the most prolific of vegetables, is also the most susceptible to cold. The cost of packing and shipping averages about one-fifth of the New York market price, while sometimes the farmer does not get sufficient to pay for the freight. If the crop should be early, a large profit will be made for a few weeks, because, as the cost of cultivation is small, the farmer is able to lose the best portion of his crop and still come out ahead.

Snap beans are also cultivated to a considerable extent. They are easily raised, and are not susceptible to cold. The acreage occupied in this way is, of course, comparatively small, and the crop is looked upon in the light of a stand-by in case of failure in other respects..

Large quantities of cabbages, lettuce, carrots, turnips, beets, and every variety of garden vegetables are raised, and supply the local markets almost all the year round. In Christ Church Parish a large acreage is employed in the cultivation of garden truck.

In favorable seasons garden farming around Charleston is almost without competition from any other section. A small crop is raised in Florida, which matures about the same time, or, perhaps, a few days earlier than the crop in this locality, but the means of transportation are much in Charleston's favor, and on that account mainly the enterprise in Florida has not been carried to any great extent.

Norfolk, Va., is the point which competes most successfully with Charleston, but her crop in favorable seasons is from four to six weeks behind the Charleston crop, and it is only when late frosts delay the Charleston crop that Norfolk, being nearer the central mart, comes in direct competition with Charleston and divides the profits.

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